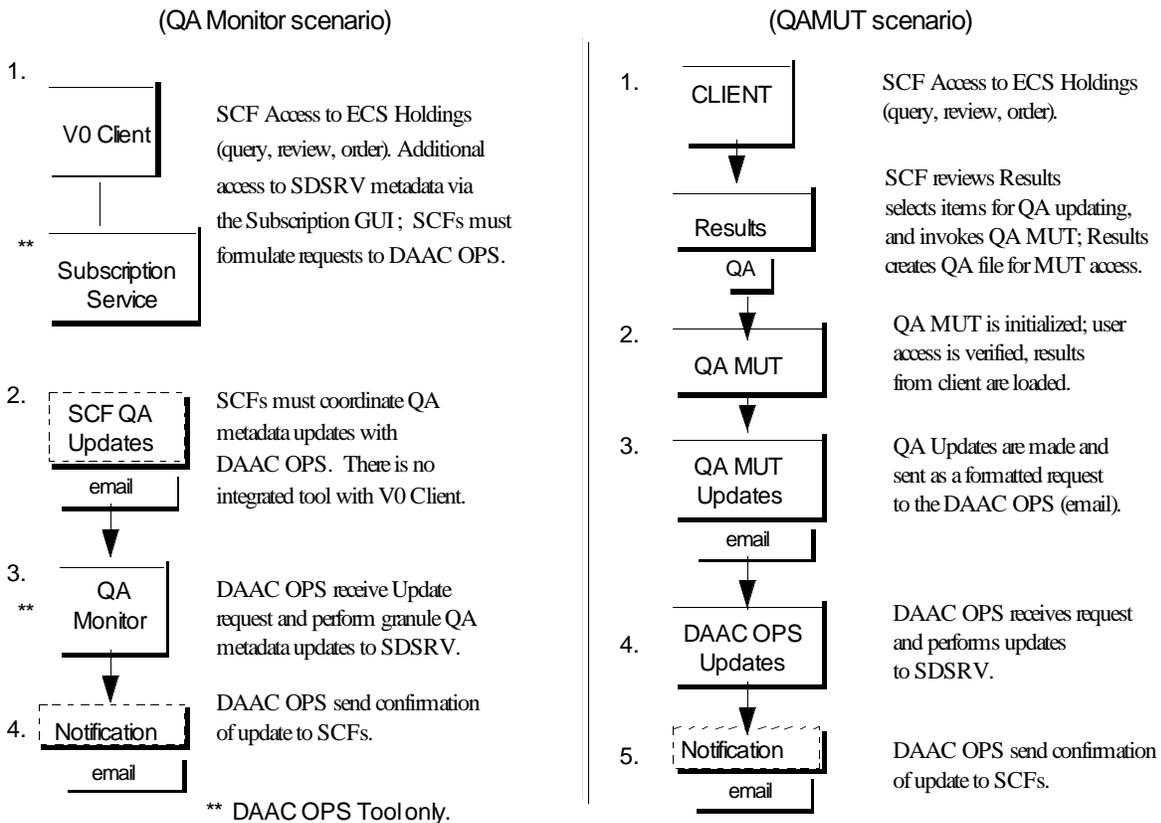


# 15. Quality Assurance

This section describes the tools available for science data Quality Assurance (QA) - the QA Monitor and the QA Metadata Update Tool (QAMUT).

Operational Quality Assurance is performed by DAAC operations personnel authorized to modify the value of the Operational QA flag attribute value for a product generated at the DAAC. The operator has the capability to view the product through EOSView and retrieve production history files. Figure 15-1 provides an overview of the quality assurance process.



**Figure 15-1. QA Metadata Update Process**

## 15.1 QA Monitor

The purpose of the QA Monitor is to enable DAAC QA experts to modify ScienceQualityFlag and OperationalQualityFlag attributes of core metadata for a granule. SCFs send email requests

to the DAAC to update the ScienceQualityFlag attribute, until the QA Metadata Update Tool (Section 15.2) is available.

The QA Monitor can be used to request the Science Data Server to search for specific types of Data Granules; Query, Retrieve, and Update (QRU) Metadata; transfer Data Granules to the operator’s computer; and transfer Production History to the operator’s computer. It can also be used to update data granule metadata, view graphical images of data granules, and print/display lists of data granules and data types. Table 15.1-1 summarizes common operator functions performed with the QA Monitor. Table 15.1-2 describes the fields in the QA Monitor; Table 15.1-2 provides the usage for each of the pushbuttons.

The QA Monitor is launched by clicking on the Desktop Icon, or via Unix commands. The Unix commands are provided following Tables 15.1-1 through 15.1-3.

**Table 15.1-1. Common Operator Functions Performed with the QA Monitor**

Operator Function	Description	Purpose
Query Data Granules	Initiates a request to search the science archive for data granules	Find all archived data granules with the same data type which were inserted into the archive at a certain time (data interval)
Retrieve Data Granules	Initiates a request to get data granules from the science archive	Transfer data granule(s) from archive to local disk for visualization
Visualize Data (HDF files)	Display Visualize screen	View graphical image of data granules to assess quality
Update Metadata	Initiates a request to archive QA information about data granules	Update data granule QA information in the archive, based on DAAC QA activities encompassing use of the Visualize Data function.

**Table 15.1-2. QA Monitor GUI Fields**

Field Name	Data Type	Size	Entry	Description
Data Granule Insert Begin End	Date min max	1/2/1901 6/1/2036	Initial default value - can be changed by user	Search criteria for granule metadata beginning and end date
Data Types list	single selection	N/A	User selects a data type from the list displayed at startup	The list of all available data types at a specific DAAC
Data Granules list	multiple selection	N/A	User clicks data granule row(s) then clicks retrieve pushbutton	The list of all data granules in the date interval above for a particular selected data type are available for retrieval.
Status	text	N/A	Displays status messages only	Displays status messages

**Table 15.1-3. QA Monitor GUI Pushbuttons**

Button	Description
Query	Populates list of data granules on the bottom half of the GUI for a particular selected data type within a data interval
Find	(below the data types and data granules list) - allow the operator to perform a keyword search for information stored in those 2 lists.
Retrieve	Allows the operator to retrieve data granule(s) or production history tar file(s) from the DAAC's data archive and place on the local disk.
Update	Pops up a Granule Parameters screen Update Metadata Dialog

### **Launching the QA Monitor Using UNIX Commands**

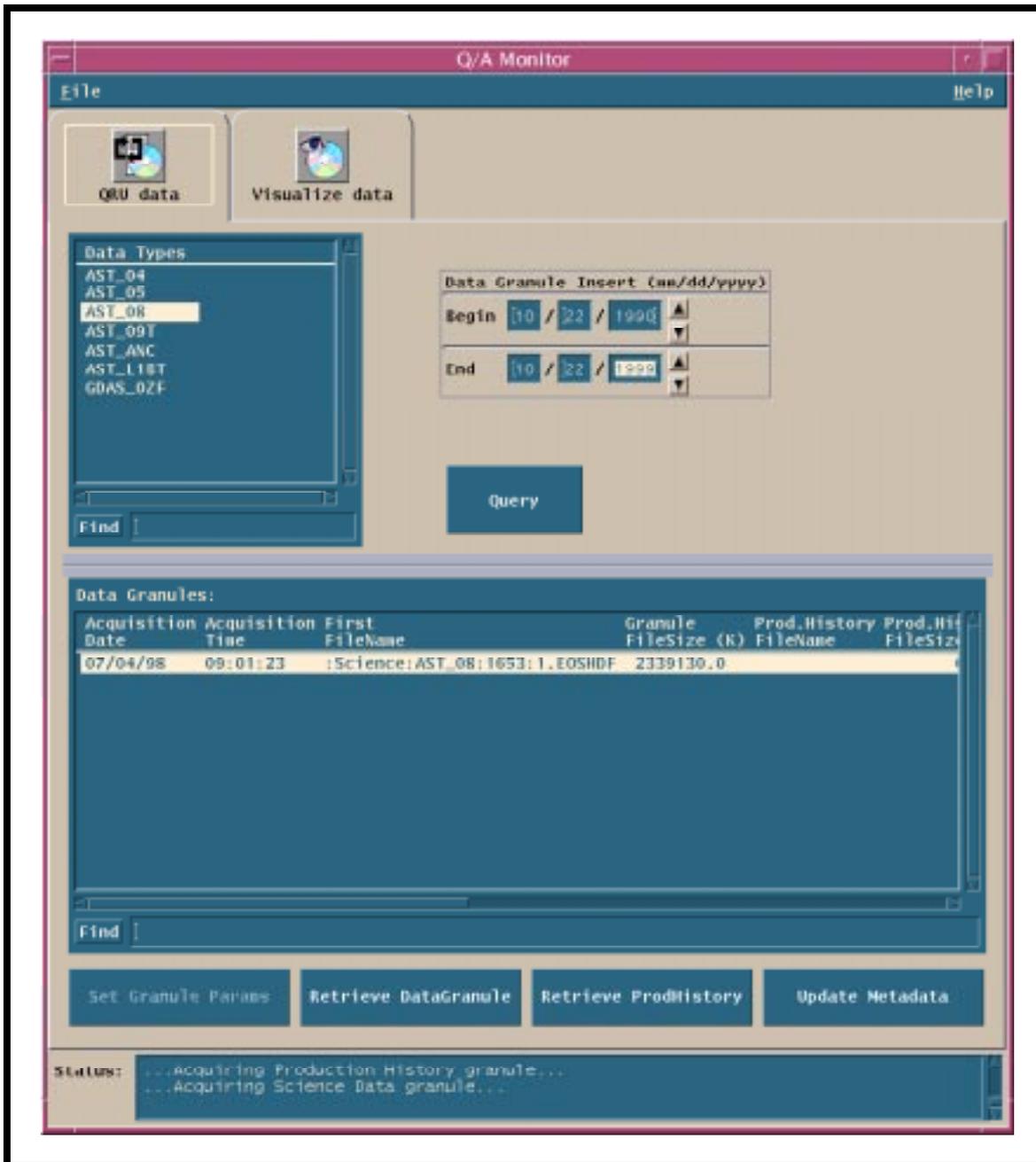
- 1 Access the command shell.  
The command shell prompt is displayed.

**NOTE:** Commands in Steps 2 through 14 are typed at a UNIX system prompt.

- 2 Type **xhost** + then press the **Return/Enter** key on the keyboard.
- 3 Open another UNIX window.
- 4 Start the log-in to the Data Processing Subsystem host by typing either **telnet hostname** (e.g., **g0sps06**), **rlogin hostname**, or **rsh hostname** in the new window then press the **Return/Enter** key.  
  
If you use the **telnet** command, a **Login:** prompt appears; continue with Step 5.  
If you use either the **rlogin** or **rsh** command, the system uses the User ID currently in use; go to Step 6.
- 5 If a **Login:** prompt appears, log in as yourself by typing your **UserID** then pressing the **Return/Enter** key.
- 6 At the **Password:** prompt type your **Password** then press the **Return/Enter** key.
- 7 Start the log-in to DCE by typing **dce\_login** then pressing the **Return/Enter** key.
- 8 At the **Enter Principal Name:** prompt type your **DCE UserID** then press the **Return/Enter** key.
- 9 At the **Enter Password:** prompt type your **DCE Password** then press the **Return/Enter** key.
- 10 Type **setenv DISPLAY clientname:0.0** then press the **Return/Enter** key.  
Use either the terminal/workstation IP address or the machine-name for the **clientname**.
- 11 Type **setenv MODE mode** then press the **Return/Enter** key.  
The **mode** will most likely be one of the following operating modes:  
OPS (for normal operation).  
TS1 (for SSI&T).  
TS2 (new version checkout).

Note that the separate subdirectories under `/usr/ecs` apply to (describe) different operating modes.

- 12 Type **source /usr/ecs/mode/CUSTOM/utilities/EcCoEnvCsh** then press **Return/Enter**. The **source** command sets the environment variables identified in the specified file.
- 13 Type **cd /path** then press **Return/Enter**.  
Change directory to the directory (e.g., `/usr/ecs/mode/CUSTOM/utilities`) containing the data processing start scripts (e.g., `EcDpPrStartQaMonitorGUI`).
- 14 Type **EcDpPrStartQaMonitorGUI mode ApplicationID &** then press **Return/Enter** to launch the **QA Monitor** GUI.  
The **QA Monitor** GUI (Figure 15-2) is displayed.



**Figure 15-2. QA Monitor GUI - QRU Data Tab**

### 15.1.1 DAAC Product QA with the QA Monitor

The Product QA process begins with the QA Monitor Application. The DAAC operations personnel will Query, Retrieve, and Update (QRU) the selected product. The operator will then

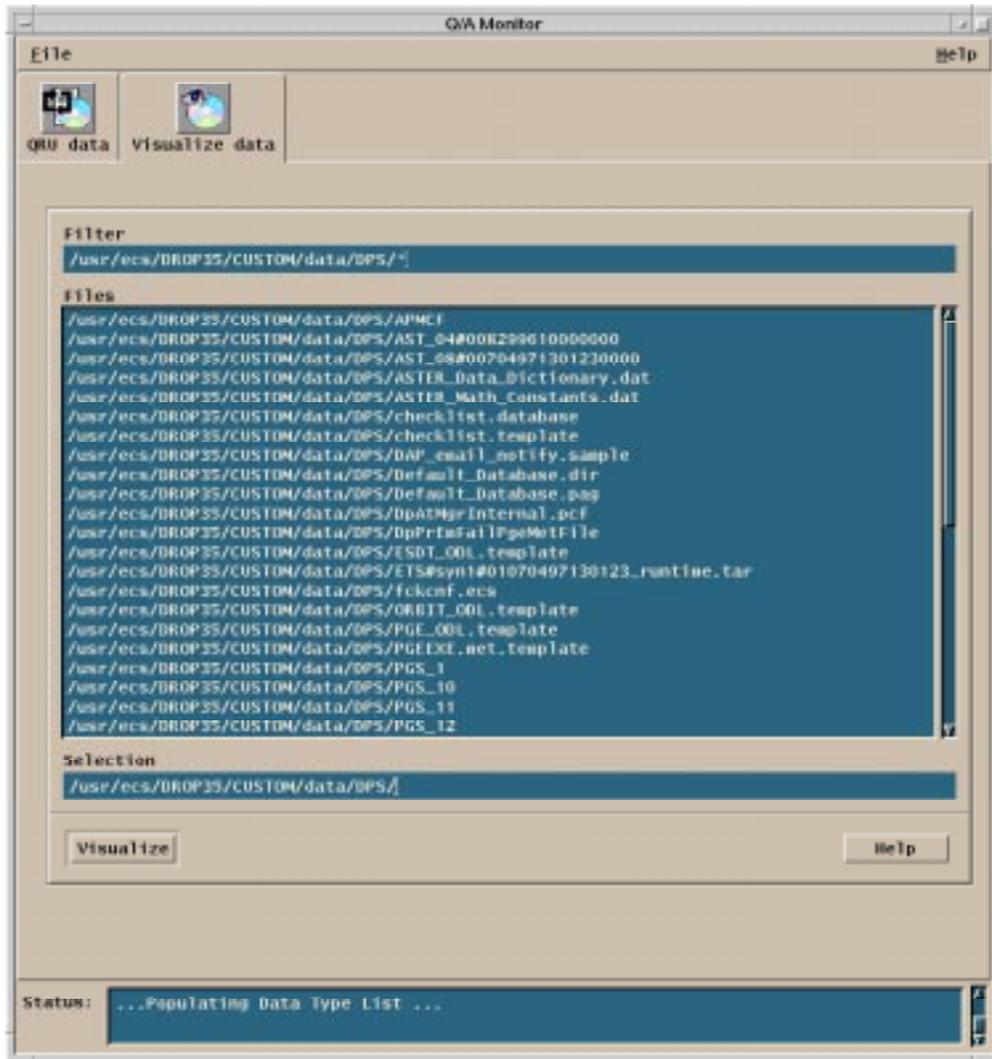
retrieve those specific products and perform a visual check of those products using the Visualize Data option of QA Monitor (Figure 15-3).

## Retrieval and Viewing of Data Granules

---

- 1 Start up the QA Monitor
- 2 Select QRU Data tab.
- 3 From list of data types, select the ESDT or compose a query in query window and click on the **Query** button.
- 4 Select a data granule by filename from the list and click on the **Retrieve Data Granule** button.  
Quit the QA Monitor GUI.
- 5 To visualize the data, select the data granule as described above and click on the **Visualize Data** button.  
Displays EOS View GUI (Figure 15-3)
- 6 Open a HDF product file from which metadata is to be viewed, select the **File**→**Open** button from the main menu bar.  
A **File Selection Dialog** window will open and the user should be able to select the appropriate directory and file to open.  
Once the desired product file has been opened, the specific types of HDF objects in the file will be listed in the **Contents** window.
- 7 From the **Contents** window double-click on a particular HDF Object (Vgroup, SDS, etc.).  
The structure of the HDF object will appear in a dialog window with buttons on the bottom portion of the window to view the data of the object itself.
- 8 Display the science data values of this particular HDF object by selecting the **Table** button to display the table data of the object.
- 9 View the attribute values of this particular HDF object by selecting the **File-Attribute** button.  
Metadata is referred to as **attribute data**.  
Any metadata associated with the object will be displayed in another text window.
- 10 Quit when done by typing Q then press the **Enter** key.

# Visualize Data



**Figure 15-3. QA Monitor - Visualize Data**

## 15.1.2 Updating QA Metadata

After the viewing, the operator will update the Operational QA flag for that specific product. The operator also updates the Science QA flags in response to an email request from SCF personnel, who have the responsibility for performing QA of their own products.

This procedure for updating QA metadata starts with the assumption that all applicable servers are currently running and the **QA Monitor GUI QRU data** tab (Figure 15-4) is being displayed.

Table 15.1-4 summarizes the QA metadata attributes and their descriptions.

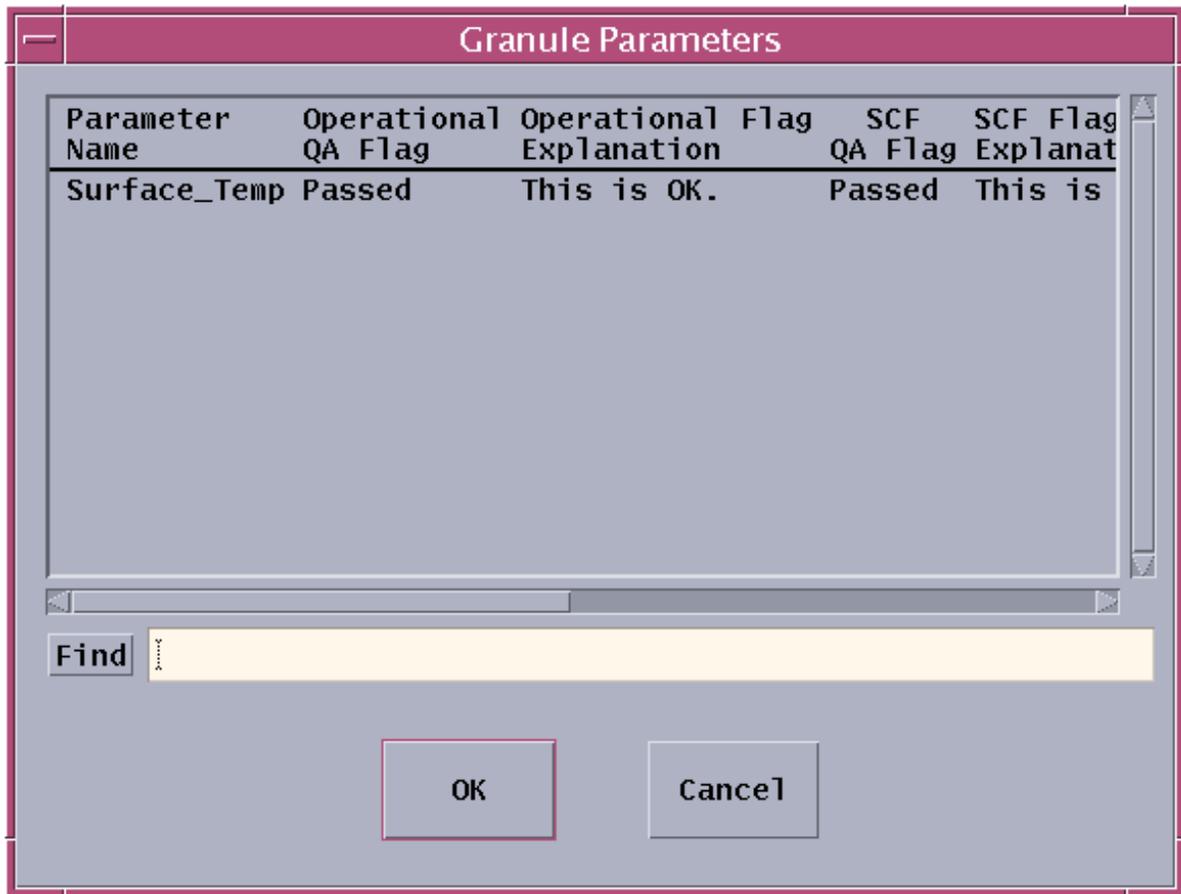
**Table 15.1-4. QA Metadata Attributes**

Field Name	Data Type	Description
OperationalQualityFlag ScienceQualityFlag	character	DAAC and SCF quality status setting of a data granule parameter, selected by the user. The valid values are: - passed - failed - being investigated - not investigated - inferred passed - inferred failed
OperationalQualityFlagExplanation ScienceQualityFlagExplanation	character	Text describing quality status (less than 255 characters), input by user.
AutomaticQualityFlag	character	DAAC and SCF quality status setting of a data granule parameter, set during data processing.
AutomaticQualityFlagExplanation	character	Text describing quality status of a data granule parameter - set during data processing.

### Updating Quality Assurance (QA) Metadata using the QA Monitor

- 1 In the **Data Types** field, click on the data type to be checked.  
It may be necessary to scroll through the **Data Types** list.  
The selected data type is highlighted.  
Only one data type can be selected at a time.  
Alternatively, the **Find** field and button can be used for specifying a data type.  
— The **Find** field is case-sensitive.
- 2 Click in the appropriate **Data Granule Insert** window field(s) and either type or use the up/down arrow buttons to enter the **Begin** date and **End** date in **MM/DD/YYYY** format.  
In the **Data Granule Insert** window it is necessary to specify the range of dates (between the **Begin** date and the **End** date) to formulate a query for searching for the desired granule(s) to be checked. Time is based upon day of insert into the data server. If no dates are entered, an error message is displayed. The up and down arrows next to the duration fields may be used for modifying entries in each field.  
The **Tab** key may be used to move from field to field.
- 3 Click on the **Query** button.  
Granules within the specified date range appear in the **Data Granules** field.
- 4 In the **Data Granules** field, click on the granule for which metadata is to be updated.  
It may be necessary to scroll through the list of granules.  
The selected granule is highlighted.  
Alternatively, the **Find** field and button may be used for specifying a data granule.  
— The **Find** field is case-sensitive.
- 5 Click on the **Update Metadata** button.  
The Update Metadata window is displayed.  
The Update Metadata window displays one line for each parameter for the selected granule.
- 6 Click on a parameter in the Update Metadata window.  
The selected parameter is highlighted.  
The Edit Parameter dialog box is displayed.

- 7 Click and hold on the **Operator Quality Flag** option button, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.  
The selected metadata flag is displayed on the **Operator Quality Flag** option button.  
The following options are available:
  - **passed**
  - **failed**
  - **being investigated**
  - **not investigated**
  - **inferred passed**
  - **inferred failed**
- 8 Type an explanation for changing the QA flag value in the **Explanation** field.
- 9 Click and hold on the **SCF Quality Flag** option button, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.  
The selected metadata flag is displayed on the **SCF Quality Flag** option button.  
The same options are available as those on the **Operator Quality Flag** option button.
- 10 Type an explanation of the QA flag selection in the **Explanation** field.
- 11 Click on the **OK** button to accept the QA flag settings.  
The Edit Parameter dialog box is dismissed.
- 12 To verify that the QA flag settings have actually been applied to the granule, first repeat Steps 1 through 5 to retrieve the same granule.  
The **Granule Parameters** window (Figure 15-4) is displayed.  
The QA flag values and explanations entered using the Edit Parameter dialog box are displayed.
- 13 Repeat steps as necessary to review additional granules.



**Figure 15-4. QA Monitor Granule Parameters Window**

### 15.1.3 Production History

The Production History (PH) is created during PGE execution within the PDPS and then Inserted into the Data Server upon PGE completion. Included in the PH are the PGE log files. Accessing a Production History associated with a particular PGE run requires the DPR ID of the PGE run.

The Production History is retrieved using the QA Monitor GUI, using the following procedure.

Follow the procedures above for selecting a data granule.

- Select the **Retrieve ProdHistory** button and view the contents of the **Production History Log**.

## 15.2 QA Metadata Update Tool

The purpose of the QA Metadata Update Tool (QAMUT) is to enable Science Computing Facility (SCF) and Distributed Active Archive Center (DAAC) QA experts to modify values of their respective quality flags (i.e., ScienceQualityFlag and OperationalQualityFlag) on core

metadata, provided via a client, for multiple granules at a time in a batch mode (vs. one granule at a time using the QA Monitor).

The QA MUT and Logical ID/UR Report Generator Tool are being implemented as a DAAC Unique Extension to ECS per Engineering Support Directive #70. This work is not yet completed, but the reference version is available at the DAACs as explained below.

The QAMUT tool itself consists of two major components: The SCF component (for updating ScienceQualityFlags) and the DAAC component (for updating Operational Quality Flags). The procedures for using QAMUT are fully documented in the following text.

## **INSTRUCTIONS and GUIDE ON USING THE ECS DATABASE QA UPDATER 1.3**

*(by Richard H. Buss Jr. on May 1999 at GSFC. Revised: October 1999)*  
(GDAAC specific instructions are marked with "at GSFC" or "At GSFC")

### **1. PURPOSE of the DATABASE QA UPDATER TOOL**

The Database QA Updater is designed to update the values of the Quality Assurance (QA) Flags in the ECS Inventory metadata within the Science Data Server. The QA Updater tool updates either Science or Operational metadata QA Flags, but not Automatic metadata QA Flags. The QA Updater sets QA values for a granule containing one or more Measured Parameters that have been examined by science or DAAC facility staff for Quality Assurance and that need to have their QA Flags values and associated QA Explanations updated.

During one run, the tool can update multiple granules at a time by assigning them distinct QA values for each Measured Parameter. This is the main purpose and strength of the tool: updating batches of various granules at a time. The granules can contain different Measured Parameters, and the QA Update Tool will still update each of the QA Flags in each Measured Parameter for all the granules listed in the input. Similar updates for the same granule but with different Measured Parameters should be grouped contiguously on separate lines in the Request so that all the updates for a granule can be done at the same time.

A uniformly formatted input request is expected to have arrived at the DAAC by email, containing an email header with the requester's return address, and containing a list of the granules to be updated, along with the new QA Flag values for the specified Measured Parameters. This list of Updates can then be passed to the Updater tool through UNIX standard input (file or terminal input). A useful but configurable Cshell script is also provided to automatically setup the UNIX environment and to run the Updater automatically to process multiple requests that reside in a single directory.

## 2. SCOPE

The program reads a list of granule URs (Universal References; i.e. database Identifiers), and their Measured Parameters, along with the new QA Flag values and associated QA Explanations. The QA tool records the date of the Update at the end of the Explanations and then updates the QA values in the Inventory metadata database (not Archive Metadata), for each granule Measured Parameter. The program accomplishes this by overwriting previous QA Flag values and previous QA Explanations with the new QA Flags and new QA Explanations for each specified Measured Parameter. Thus, the QA Updater writes new QA metadata values but does NOT append QA values to existing metadata. Instead, blank inputs for QA Flag and Explanation values will cause the tool to set metadata QA values to "NULL" in the database, effectively erasing previous QA metadata.

Also, if the input specifies "ALL" for the Measured Parameter of a single granule, the tool will update all the Measured Parameter QA Flags in that granule so that all the flags will have the same value and all the QA explanations will have another uniform value. IMPORTANT: The tool can not update granules that have no Measured Parameters. Also, if a Measured Parameter is incorrectly specified for one granule, the Updater tool will perform updates to all other granules in the request, but it will not update any of the QA Flags in any Measured Parameters for that erroneously specified granule.

After performing the updates, the Database QA Updater will write to disk a file logging 1) the initial request, 2) the old QA values, and 3) the new updated QA values. This QA Update log file is intended to be saved as an record of the updates. In addition, the program will write runtime diagnostic messages that can be viewed on the terminal or redirected to a runtime log file (UNIX standard out). Finally, the program writes a temporary file specifying the status of the requests, notifies the requester by emailing this file back to the remote return address, and then the program deletes the notice from the local disk. This completes the QA Update process. The program must be invoked again in order for another request to be processed. However, if multiple requests reside in a single directory, the companion Cshell script, QAupdate.csh, will process all the requests together by invoking the QA Updater Tool multiple times.

## 3. TO INSTALL the TOOL

The core of the tool is a UNIX C++ binary executable that must run with its ascii configuration file. For interactivity, there is an optional Graphical User Interface program in TCL language that can invoke the C++ executable. These components of the Database QA Updater are distributed as a package tar file and a README file.

### a) Files

First, if needed, unpack the tar file on the ECS Science Data Server Machine (SDSRV) in your local QAmangement directory with UNIX command:

```
tar -xvf packet_QA_UPDATER.tar .  
chmod u+x CIMuQaMetadataUpdate*  
more CIMuQaMetadataUpdate.CFG
```

The account containing this directory must be able to receive email or files that contain the QA Update Requests. Your directory should now have the following files:

**Filename..... Purpose**

README_QA_Updater	The master usage guide to the QA Updater
CIMuQaMetadataUpdate.CFG	The text configuration file for use in ECS
CIMuQaMetadataUpdate	The binary executable that updates the QA
CIMuQaMetadataUpdate.tcl	A manual Graphical User Interface to the Updater
CIMuQaMetadataUpdate.C	The partial source C++ code of the main program
QAupdate.csh	Cshell script to setup and run Updater on multiple requests
Input_example_QA_Updater	A sample input file that the Updater can process
Log_example_QA_Updater	A sample output log file that the Updater writes
Runtime_example_QA_Updater	A sample runtime diagnostic to standard out
Output_example_QA_Updater	A sample email notice sent back to the requester

The approximate sizes in kbytes of the Update Tool files are:

README_QA_Updater	28
CIMuQaMetadataUpdate.CFG	0.8
CIMuQaMetadataUpdate	3679
CIMuQaMetadataUpdate.tcl	10.6
CIMuQaMetadataUpdate.C	27
QAupdate.csh	1.1
Input_example_QA_Updater	1.6
Log_example_QA_Updater	9
Runtime_example_QA_Updater	0.6
Output_example_QA_Updater	1.7

It is recommended that all the CIMuQaMetadataUpdate\* files, including examples be kept together in one directory at all times. It is also recommended that the real input requests be placed in a separate directory and that the output log files be placed in yet other separate directories. This structure should help you manage separately the inputs, the tool, and the outputs. Directories at GSFC:

- \bin
- \requests
- \logs
- \archiveQAupdates

**b) Platform**

The Database QA Updater C++ source code was compiled with CC compiler 4.0 at Raytheon Landover, MD in the ECS build environment containing links to other source code libraries such as Roguewave. It therefore can not be compiled at your site. The version and other information is imbedded in the binary file. This info can be view by the unix command:

what CIMuQaMetadataUpdate | more

The QA Updater Version 1.3 was compiled on a UNIX machine:

SunOS starfire 5.5.1 Generic\_103640-08 sun4m sparc SUNW,SPARCstation-20.

The source code of the main program is given to help you understand the actions of the program. The program was successfully repeatedly tested on a SunOS g0acs03 5.5.1 Generic\_103640-20 sun4u sparc SUNW,Ultra-Enterprise at GSFC using input emails sent by UNIX mail, Netscape Messenger, Eudora, and Microsoft Outlook, all saved to disk with Netscape 4.0.7 Communicator.

\*\*\*\*The average execution time is about 2 CPU seconds for each update.\*\*\*\*

#### **4. CONFIGURATION FILE**

At the moment, the Database QA Updater is NOT formally integrated into ECS, so many lines in the configuration file are not yet used by ECS nor the tool.

There are, however, three required lines and one recommended one (Site) for you to specify correctly. At GSFC some entries from the CIMuQaMetadataUpdate.CFG file are:

```
EcDsScienceDataServerG1      = G1
Site                          = GSFC
Name                          = CIMuQaMetadataUpdate
STATUSFILEPATH                = /home/quality/archiveQAupdates/
```

These are the names of the DCE SDSRV Database Cell, the DAAC, the QA Updater program, and the path to where the QA Update log files will be saved (write permission required). In addition, the line

```
DataFileName      = /usr/ecs/TS2/CUSTOM/security/EcSeRandomDataFile
```

can apparently be used in the future for security. The major and minor versions in the config file should be kept current so that they reflect the version of the binary tool itself: e.g. 1.3 .

The directory of the executable QA update tool is the default directory that the tool uses in case the configuration file can not be found by the tool. However, a configuration file can be placed in and referenced to an arbitrary location (neither links nor cross-mounting recommended). At GSFC, the /tools/gdaac/\$MODE/bin/DSS and /tools/gdaac/\$MODE/cfg/DSS contain the QA Updater Tool and configuration file, respectively.

#### **5. TO RUN the TOOL**

##### **SHORT METHOD:**

- 1) edit the QAupdate.csh script to refer to your local directories

- 2) place QA request files with valid URs into the requests directory
- 3) setenv MODE <TS1/TS2/OPS> (one of the three! Default: OPS)
- 4) execute QAupdate.csh on the UNIX command line within the Cshell

The ESDTs for the granules must already have been loaded by system administration into the Science Data Server and the Science Data Server must already be running. If the tool becomes formally part of ECS, an initial dce\_login will probably be required, too, before the tool can run. The QA Update Tool is known to interact with the ECS system by:

- A) updating the SDSRV database metadata,
- B) querying ESDTs installed in SDSRV, and
- C) fulfilling subscription events to metadata updates.

Since the QA updates are restricted to the SDSRV, the tool is simple to run and will work in parallel with other ECS activities such as INGEST.

All DAACs can run the Updater on their local file structure. (However, at GSFC, the DAAC Database QA Updater can be run on g0acs03 from the quality account (/home/quality/bin) with the Tool and configuration file in /tools/gdaac/\$MODE/bin/DSS and /tools/gdaac/\$MODE/cfg/DSS .)

#### **LONG METHOD:**

---First, set the MODE to one of the following three:  
setenv MODE <TS1/TS2/OPS>

---Second, source the setup file  
source /usr/ecs/\$MODE/CUSTOM/utilities/EcCoEnvCsh

**IMPORTANT!!!!!!!**If this file is missing, manually convert the EcCoEnvKsh file in that directory to EcCoEnvCsh and then source the converted file.

This step creates links to needed libraries through the LD\_LIBRARY\_PATH path. Some DSS and CSS subsystem libraries are probably both used by the tool. (In an emergency at GSFC, source EcCoEnvCshcopy in /home/quality/bin.)

---Third, invoke the Database QA Updater. The tool can be run two ways: by command or by GUI window.

1) From the command line, an example execution (at GSFC, tool is in /tools/gdaac/<MODE>/bin/DSS):  
ClMuQaMetadataUpdate ConfigFile  
ClMuQaMetadataUpdate.CFG ecs\_mode \$MODE < QAupdate\_emailrequest.txt

where the format is:  
executable ConfigFile (Configuration filename) ecs\_mode (MODE) < (input filename) > (output runtime log filename)

and where the "> output runtime log filename" is optional to save STDOUT. Note that absolute and relative path names can be used for the filenames on the command line. Note also that the

optional runtime log file is distinctly different from the mandatory QA update log filename specified in the configuration file; in the first case, program runtime information is saved or displayed; in the second case, the QA metadata values and Update Request are saved.

2) An operator can also invoke and use a graphical tool CIMuQaMetadataUpdate.tcl to perform QA updates with GUI buttons.

Example:

```
CIMuQaMetadataUpdate.tcl CIMuQaMetadataUpdate.CFG $MODE &
```

Limited online help for running the Updater is available in the GUI. STDOUT also is written in the GUI window but can only be saved manually to a file.

## 6. INPUT FILE FORMAT (Specifications)

Though the wrapper script QAupdate.csh can process multiple request files in one directory, the Updater tool itself processes one QA update request file at a time. The input file is constructed by the requester who has examined the granules for quality and has decided to update the QA Flags in the granules. The requester should have previously obtained a granule identifier (UR, Universal Reference) from ECS, for example, by the subscription notices that are emailed to the requester when data is transferred by ECS to the requester. (Alternately, to facilitate identification of data granules at GSFC, the UR is published together with the local granule ID in a lookup file. Note that the UR is NOT contained inside the granule itself nor in its metadata!) In any case, the Update Request must specify the granule by UR for the Updater tool to work.

The input QA Update request file must have four major items:

- email header
- begin line
- request line(s)
- end line

Sample Input File (Example):

```
Date: Wed, 25 Nov 1998 12:55:42 -0500
From: rbuss@gsfcsrvr4.gsfc.nasa.gov
Reply-To: Richard.Buss@gsfc.nasa.gov
Organization: EOS-DAAC GSFC
X-Mailer: Mozilla 4.07 [en] (X11; I; SunOS 5.5.1 sun4m)
MIME-Version: 1.0
To: quality@g0ins01u.ecs.nasa.gov
Subject: QA Update Request for ECS. This is a test of the DAAC Database QA Update Tool.
```

```
begin QAMetadataUpdate Science
UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[GSF:DSSDSRV]:19:SC:AST_09T.001:19
88 GuruTej Passed test
```

```
UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[GSF:DSSDSRV]:18:SC:AST_05.001:1990
GuruTej Passed test
end QAMetadataUpdate
```

*This concludes the Example input file.* Details on each item follow:

1) The email header **MUST** contain at least three lines in any order:

From:  
Subject:  
To:

The email header safely can contain many other fields such as Reply-To: or Received: or Date:, but it must contain at minimum, these three fields.

A) The Database QA Updater will email the return notice back to the sender at the Reply-To: address, if it exists before the end of the header, or alternatively, back to the From: address.

B) The Subject line is a valuable means of identifying the QA update Request, both for the requester and for the DAAC. At GSFC the subject line should begin with  
Subject: QA Update Request for ECS.

and then followed on the same line by any other information that the requester wants to use to identify the request. The QA Updater will echo back this subject line in the return email notice sent to the requester. This will help identify which Update request was actually completed. The use of single quotes (') in the subject line is, however, strongly discouraged to avoid confusing email programs.

C) The To: address that receives the requests at GSFC is `quality@g0ins01u.ecs.nasa.gov` .

2) a begin line with either Science or Operational specified for the kind of update:

begin QAMetadataUpdate Science  
or  
begin QAMetadataUpdate Operational

The request must be for a single type of update; it can not contain both kinds of update at once.

3) one or more update entries, one entry to each line and four fields in each entry, each separated by tabs, not blanks nor commas, nor double quotes. The fields on one line are

A) Database ID name/number (UR) B) Parameter name C) QA Flag Value D) QA Flag Explanation.

FORMAT:

NAME:NUMBER<tab>PARAMATER<tab>QAFLAG<tab>Explanation

Example:

UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[GSF:DSSDSRV]:18:SC:AST\_05.001:1990  
GuruTej Not Investigated An Explanation

The Updater has been successfully tested on a request with 63 update UR lines.

4) an end line with a return (new line) as the last character:

end QAMetadataUpdate

*Here are some **IMPORTANT** details to consider when the requester creates an input file:*

--When a cut and paste is used to send in a request, it often loses the crucial tab and line-wrap formattings. It is recommended that an editor be used to compose the Request, rather than pasting into an email messaging utility. The edited file can then be imported or read into the emailer rather than a dangerous cut and paste.

---The six valid QA flag values for both Science and Operational in the 1999 ECS Data Model are:

i) Not Investigated ii) Being Investigated iii) Passed iv) Failed v) Inferred Passed vi) Inferred Failed. No double quotes (") can be with the Flag or the request will fail.

---The Explanation field is free form, can be blank, and can contain special characters EXCEPT double quotes (") or tabs. The length of the Explanation can be up to 235 characters. An update date is always appended to the Explanation (for a maximum length of 255 characters) when the database is updated.

---The same granule can be updated twice within the same request, but the entry lines for that granule must immediately follow each other (be contiguous). Otherwise, the program will crash (bus error) when the granule is accessed for the second update attempt! This applies particularly to granules with several Measured Parameters.

---For a given update type (either Science or Operational), the requester can specify ALL as the parameter name in order for all Measured Parameters in the granule to be set with the same value and with the same explanations (but values and explanations separate from each other.)

## **7. OUTPUTS**

Each time it runs, the QA Updater program creates several outputs:

- 1) New QA Metadata in the Science Data Server Database Table (DsMdMeasuredParamater).
- 2) An Update log file, named by current date and time, containing the
  - A) address of the requester, the request subject, and a copy of the request
  - B) QA Metadata values before and after the update
  - C) runtime status messages and success/fail summary
- 3) A return status notice that is emailed back to the requester. It contains:
  - A) a short summary, if the QA Updater was successful
  - B) a long description with error/warnings for most failures.
- 4) An output stream to Standard Out (STDOUT), listing the progress of the program.

(The QAupdate.csh wrapper script sends a few minor diagnostic messages to STDOUT (the screen).

## **8. CAPABILITIES OF the DATABASE QA UPDATER**

The tool:

- 1) Updates Operational and Science QA metadata separately.
- 2) Reads a single request file containing an email header and one or more granule ID updates.
- 3) Successfully batch updates all specified QA metadata in those granules.
- 4) Updates together both the QA Flag and the QA Explanation.
- 5) Completely updates the QA metadata including those with null (blank) values.
- 6) Writes the date of the Update at the end of the QA Explanation.
- 7) Successfully processes one update request after another.
- 8) Works if multiple simultaneous QA update processes are invoked.
- 9) Accepts full path and current directory file names (known to work on 143 characters).
- 10) Updates other granules if Measured Parameter is incorrectly specified for some granules.
- 11) Successfully processes requests with blank lines or one line containing only tabs.
- 12) If requested, updates other Measured Parameters if one is incorrect for the same granule.
- 13) Will update the QA flag in all Measured Parameters in the granule if ALL option is specified.
- 14) Processes QA explanations with special characters such as @ and ' and one extra <tab>.
- 15) Sends return email to most REPLY-TO: addresses instead of FROM: address.
- 16) Writes various success, warning and error status messages to Standard Out (STDOUT).
- 17) Writes similar status messages to the Update log file and to the return notice.
- 18) Deletes the return notice from disk after it has been emailed back to the requester.
- 19) Can be used with a wrapper script QAupdate.csh to process multiple request files.

## **9. LIMITATIONS OF the DATABASE QA UPDATER**

- 1) Issues warnings in the log file ("is invalid with respect to rule") that invalid metadata was requested, but still allows the values to be written into the database!
- 2) Allows further QA updates of the same granule in the same message only if the update request lines for that granule are contiguous (sequential) in the request file. Otherwise, if

the same granule is requested to be updated again in the same request file, and the update lines are separated in the file, then the program crashes!

- 3) Does not process QA Explanations nor Flags containing double quotes "

(error written in log: "Could not update metadata in catalog")

- 4) For safety reasons to the Database QA Metadata, requests that appear to be corrupted and do not follow the format, are not processed, other than to send error messages to the log file and back to the requester. NONE of the granules are updated for these format/content errors, which include:

- A) extra entries (total >4) on any line ("Too many fields on line" message is written to the log)

- B) a non-existent database ID name/number (UR) on any line, including a blank or misspelled UR

- C) missing begin line

- D) missing or incomplete email header

- 5) The program exits abruptly, without warning messages, if the specified configuration file is misspelled or nonexistent.

## 10. FUTURE

A more complex Cshell wrapper script is under development at GSFC DAAC. The script sorts the URs to prevent crashing caused by repeating URs, provides a configurable security limit of, say, 10,000 allowed updates per message, and checks metadata valids before the Updater is run. The wrapper script also tests for the presence of the configuration file and will exit with warning messages if the file is not found. It also will manage the requests by filing them into failed, passed, and partially successful categories, so that appropriate actions can be taken by the DAAC and the requester.

## 11. ACKNOWLEDGEMENTS

The author appreciates the advice, consultation, and assistance of Robert Kummerer, A. K. Sharma, Sushma Singhal, and Mark Fuerst during the development and testing of this software. I am grateful for the expertise of Robert, the collaboration of A. K., the design and conceptualization of Sushma, and the support of Mark. Thanks to all the programmers who contributed to the tool and to NASA GSFC EOSDIS with Robert Lutz for making Quality Assurance possible in the ECS metadata.

If you notice any inconsistencies or errors in this guide to the Database QA Updater, you can email them to [Richard.Buss@gsfc.nasa.gov](mailto:Richard.Buss@gsfc.nasa.gov) or the GSFC DAAC Code 902.2 Greenbelt MD 20771 for corrections.

## 12. APPENDIX: ERROR AND WARNING MESSAGES

To access the status messages written by the program, read the Standard Out stream. This stream contains some status messages, as well as contains the name of the associated Updater log file (named with a date/time stamp). Print the log file to examine more status messages. The log file also contains the address of the requester and the subject of the request, which identify which log file corresponds to each processed request.

### 1) Operating system statuses

```
---Warning: Could not open message catalog "oodce.cat"
```

You can safely ignore this ECS warning message produced by the dce utility.

```
---ld.so.1: CIMuQaMetadataUpdate: fatal: libDsClSh.so: can't open file: errno=2  
Killed
```

This is a failure to link with the required libraries.  
Make sure you are on the SDSRV machine, at GSFC g0acs03.  
Try sourcing the EcCoEnvCsh setup file and re-running the Updater.

```
---ld.so.1: CIMuQaMetadataUpdate: fatal: relocation error: symbol not found:  
__0oPGIParameterBasectPCc: referenced in CIMuQaMetadataUpdate  
Killed
```

This is a failure to link with the required libraries probably because of a mismatch between the tool version and the ECS drop version. A new drop version of ECS installed at your site might have caused this error. The executable needs to be recompiled at Landover/Raytheon under a newly created clearcase view for that drop version.

```
---Permission denied
```

Try adding execute (chmod +x) to the file permissions for CIMuQaMetadataUpdate.

### 2) Standard Out messages

```
---SUCCESSFULLY updated all granules.  
Errcount = 0
```

```
---ERRORS occurred during processing the request. QA Update program is quitting.  
NO GRANULES WERE UPDATED FOR THIS REQUEST.
```

(Probably one or more UR granule IDs in the request are not in the database.)

```
---WARNING: Invalid metadata was entered in the Inventory.
```

(The requester misspelled the value of QA Flags. Process a revised request containing valid QAFlag values; otherwise, bad metadata will remain in the database!!)

---ERROR in updating QA: Email return address is missing from request.  
NO QA updates were performed for this request.

(The email request was saved only partially to disk before the program ran.)

---ERROR: Update Request had invalid metadata values such as quotes.

(No double quotes are allowed in the QAFlag and QA Explanations in the request.)

---WARNING: A measured parameter did not initially have any QA Flag.

(Best to check that the database contains updated QA values. If, not, try processing the request again; it might work the second time.)

### 3) Updater program status messages:

-----  
---Error creating DsCIESDTRreference for granule  
Failure to create ESDT Reference, QA Update program is quitting.  
NO GRANULES WERE UPDATED FOR THIS REQUEST.

The database ID (UR) is missing or wrong for AT LEAST one entry in the input request.  
This happens when:

- a) an ESDT specified in a request UR does not match the actual ESDT UR (database ID) for a particular granule. (E.g. the requested UR contains MOD01 when the actual granule is MOD07\_L2 type.)
- b) a UR field is missing from any one line in the input request.
- c) one UR Database ID in the request is nonexistent in the SDSRV database. (E.g. 44790 when there are only 30000 granules in the database.)
- d) there are only blank lines between the begin and end lines in the request,

In these cases, NO updates on ANY granules have been done; a revised request for updating the same granules, but all with proper URs, will have to be submitted by the requester.

-----  
---\*\*\*\*\*MeasuredParameter <param> not found in granule metadata  
Errors during update process. Updates not done for this granule UR.  
An ERROR occurred during the update process for <granule>  
\*\*\*\* This QA Update was not done for granule: <granule>  
Other granules will be updated.

A line in the input request file has a wrong or missing parameter name. The program does not make any of the QA update for this granule. The program makes all other updates for the other granules, though. The program automatically by email notifies the requester of this error.

---

---

---UnnamedPL[(MeasuredParameter not found.) ErrorMessage(ESDT Execution failed)]  
\*\*\*\* This QA Update was not done for granule: <granule>  
Other granules will be updated.

The granule does not even have a Measured Parameter or QA Flag to be updated!  
This granule should be deleted from the Update request because the metadata do not permit  
updating or even setting the QA Flags.

---

---

---

---ESDTResults[(Could not update metadata in catalog) ErrorMessage(ESDT Execution failed)]  
ESDTStatus(0)  
CmdSuccess(1)]

The request line has double quotes in the explanation.

---

---

---

---Can't get status file path from config file.

Make sure that the directory path to the logfile, as specified in the configuration file, is spelled  
correctly and has write permission.

---

---

---

---Unable to find a begin line or the email header is incomplete.  
Input file does not have proper format: Subject, From, To, begin.  
NO QA updates were performed for this request.

Check the email header to make sure all three required lines are present.  
Check that the begin line has Science or Operational after the begin word.  
The program should be run again on the corrected request.

---

---

---

--Too many fields on line  
End of input requests  
Errors occurred during processing, quitting.

There are extra fields on one input line (5 or more filled out fields separated by tabs).  
The program does NOT process any of QA updates on ANY of the granules.  
Notify requester that the request did not have the proper format.

---

---

---

---WARNING: end QAMetadataUpdate line not found.  
Processing will continue, but lines may be missing.  
End of input requests

Check that the input request file was not split or the latter part deleted, because the input file does not have an end line (or is missing a <return> after the end line). If the request was erroneous, notify the requester.

The program finishes and does all the updates listed in the processed request, but some of the updates in original request email might not have been processed because the request was inadvertently altered.

-----  
-----  
---ESDTResults[WARNING(Attribute  
(INVENTORYMETADATA:MeasuredParameter:MeasuredParameterContainer:QAFlags:ScienceQualityFlag=Fail)

is invalid with respect to rule [Match(Passed,Failed,Being Investigated,Not Investigated,Inferred Passed,Inferred Failed)]  
UR(UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[GSF:DSSDSRV]:19:SC:AST\_09T.00  
1:1076]  
ESDTStatus(1) CmdSuccess(1)]

The request updates QA flags with invalid new metadata values. The program processes all entries, finishes, but writes this warning.  
In the log, both ESDTStatus(1) CmdSuccess(1) mean success; either ESDTStatus(0) or CmdSuccess(0) for a given request line means that the particular granule QA update failed.

-----  
-----  
---ESDTResults[WARNING(Missing parameter  
INVENTORYMETADATA:MeasuredParameter:MeasuredParameterContainer:QAFlags:AutomaticQualityFlagExplanation  
in group  
INVENTORYMETADATA:MeasuredParameter:MeasuredParameterContainer:QAFlags.)

The metadata of this granule were initially incorrect before the QA Updater was even run.

The MCF file or the ESDT in the Inventory SDSRV database is not properly written to receive QA metadata updates. Before the QA update request can be processed, the MCF file or ESDT for the data product will have to be modified so that the PGE can write at least one QA metadata Flag (e.g. AutomaticQualityFlag) in the metadata.

-----  
-----  
---ERROR on begin QAMetadataUpdate line: expecting \"Science\" or \"Operational\""

The type of request is misspelled or missing on the begin line of the request.

### 13. APPENDIX: BUILD LINE

```
CC -I. -I./sun5.5 -I/tools/oodce/usr/include/oodce
-I/tools/oodce/usr/include/ -I/usr/include/dce -I/usr/include
-I/ecs/formal/CLS/include -I/ecs/formal/COMMON/include
-I/ecs/formal/COMMON/include/sun5.5 -I/ecs/formal/CSS/include
-I/ecs/formal/CSS/include/sun5.5 -I/ecs/formal/MSS/COTS/peer/src/include
-I/ecs/formal/MSS/include -I/ecs/formal/MSS/include/sun5.5
-I/ecs/formal/IOS/include -I/ecs/formal/IOS/include/sun5.5
-I/ecs/formal/DSS/include -I/ecs/formal/DSS/include/sun5.5 -g
-DSUNOS55X -ptrsun5.5/Templates/CIMuQaMetadataUpdate.o -mt
-I/ecs/formal/IOS/include/ -I/ecs/formal/IOS/include/sun5.5
-I/tools/rogue70_new -DRW_MULTI_THREAD -D_REENTRANT -DRWDEBUG=1
-I/tools/rogue70_new -DRW_MULTI_THREAD -D_REENTRANT -DRWDEBUG=1
-I/tools/sybOCv11.1.0//include -Dunix -DNIDL_PROTOTYPES -D_REENTRANT
-D_CMA_PROTO_ -DSYSV -I/tools/oodce/usr/include/oodce -I/usr/include/dce
-I/tools/oodce/usr/include/oodce -I/usr/include/dce -mt -c -o
sun5.5/CIMuQaMetadataUpdate.o CIMuQaMetadataUpdate.C
"/ecs/formal/CSS/include/EcPfClient.h", line 74: Warning:
EcPfClient::PfProcessEvent hides the virtual function
EcPfGenProcess::PfProcessEvent(EcAgEvent*, EcTagLogType).
"CIMuQaMetadataUpdate.C", line 542: Warning (Anachronism): Undefined
character escape sequence "\-".
"CIMuQaMetadataUpdate.C", line 542: Note: Type "CC -migration" for more on
anachronisms.
"CIMuQaMetadataUpdate.C", line 542: Warning (Anachronism): Undefined
character escape sequence "\-".
3 Warning(s) detected.
/ecs/formal/COMMON/CSCI_Util/src/Build//cmAccess
/ecs/formal/CLS/bin/sun5.5/CIMuQaMetadataUpdate
/ecs/formal/COMMON/SysBuild/generate_EcsVersion_C
CIMuQaMetadataUpdate
CC -DSUNOS55X -c
/ecs/formal/COMMON/SysBuild/Versions/CIMuQaMetadataUpdate_EcsVersion.C -o
/ecs/formal/COMMON/SysBuild/Versions/CIMuQaMetadataUpdate_EcsVersion.o
CC -ptrsun5.5/Templates/Pr_CIMuQaMetadataUpdate
-ptrsun5.5/Templates/CIMuQaMetadataUpdate.o
-ptrsun5.5/Templates/CIMuQaMetadataUpdate.o -R
../lib/COM:../lib/CLS:../lib/DMS:../lib/CSS:../lib/DPS:../lib/DSS:../lib/INS:../lib/I
OS:../lib/MSS:../lib/PLS:../lib/V0_Client:../lib/COTS/rogue/lib:../lib/COTS/sybase/lib:../
lib/COTS/xaclient/lib:/ecs/formal/CLS/lib/sun5.5:/ecs/formal/COMMON/lib/sun5.5:/ecs/formal/
CSS/lib/sun5.5:/ecs/formal/MSS/lib/sun5.5:/ecs/formal/IOS/lib/sun5.5:/ecs/formal/DSS/lib/sun5.
5:/view/DROP5A_sun5.5/ecs/formal/COMMON/lib/sun5.5:/view/DROP5A_sun5.5/ecs/formal/
CSS/lib/sun5.5:/view/DROP5A_sun5.5/ecs/formal/MSS/lib/sun5.5:/view/DROP5A_sun5.5/ecs/f
ormal/IOS/lib/sun5.5:/view/DROP5A_sun5.5/ecs/formal/DSS/lib/sun5.5:/ecs/formal/IOS/lib/sun
5.5:/view/DROP5A_sun5.5/ecs/formal/IOS/lib/sun5.5:/tools/rogue70_jun99/lib:/tools/rogue70_j
un99/lib:/tools/rogue70_jun99/lib:/tools/sybOCv11.1.0/lib:/tools/oodce_jun99/usr/lib
-o /ecs/formal/CLS/bin/sun5.5/CIMuQaMetadataUpdate
sun5.5/CIMuQaMetadataUpdate.o -L/ecs/formal/CLS/lib/sun5.5
/ecs/formal/COMMON/SysBuild/Versions/CIMuQaMetadataUpdate_EcsVersion.o
-L/ecs/formal/CLS/lib/sun5.5 -L/ecs/formal/COMMON/lib/sun5.5
-L/ecs/formal/CSS/lib/sun5.5 -L/ecs/formal/MSS/lib/sun5.5
```

```

-L/ecs/formal/IOS/lib/sun5.5 -L/ecs/formal/DSS/lib/sun5.5
-L/view/DROP5A_sun5.5/ecs/formal/COMMON/lib/sun5.5
-L/view/DROP5A_sun5.5/ecs/formal/CSS/lib/sun5.5
-L/view/DROP5A_sun5.5/ecs/formal/MSS/lib/sun5.5
-L/view/DROP5A_sun5.5/ecs/formal/IOS/lib/sun5.5
-L/view/DROP5A_sun5.5/ecs/formal/DSS/lib/sun5.5 -lDsClSh -lDsCnSh
-lEcUtMiscSh -lDsShSh -lG1Sh -L/ecs/formal/IOS/lib/sun5.5
-L/view/DROP5A_sun5.5/ecs/formal/IOS/lib/sun5.5 -lIoAdSearchSh -lIoAdSubsSh
-lIoAdCoreSh -lIoAdServerSh -lIoAdProxySh -lEcPoSh -lEcPoDbRWSH -lDsCnSh
-lEcUtMiscSh -L/tools/rogue70_jun99/lib/ -lrwdbg_mt
-L/tools/rogue70_jun99/lib -lrwtoolg_mt -lG1Sh -lEcUtMiscSh -lEcDcNotifySh
-lEcDcMsgPng1 -lCsEmMailRelASh -lC -lEcNsServiceLocSh -lEcFhSh
-lEcNsServiceLocatorSh -lEcUrSh -lEcPfSh -lEcCfSh -lEcAgInstrm
-lagenteventSh -leventSh -lCsFtFTPSchedObjSh -lCsFtFTPRelASh -lexpect -ltcl
-lEcTiTimeSh -lEcSeSybSecurityStubbedSh -lEcSeUtilityCtStubbedSh
-lEcSeServerKeyMgmtSh -lEcSeCmiSh -lEcDcMsgPng1Sh -lEcDnDirSh -lEcUtSh
-lEcUtFactorySh -lEcPtSpecialLockSh -L/tools/rogue70_jun99/lib -lrwtoolg_mt
-Bstatic -L/tools/sybOCv11.1.0/lib /tools/sybOCv11.1.0/lib/libct_r.a
/tools/sybOCv11.1.0/lib/libcs_r.a /tools/sybOCv11.1.0/lib/libcomn_r.a
/tools/sybOCv11.1.0/lib/libintl_r.a /tools/sybOCv11.1.0/lib/libtcl_r.a
-Bdynamic /tools/sybOCv11.1.0/lib/libtli_r.so -L/tools/oodce_jun99/usr/lib
-loodce -lInsl -Bdynamic -ldce -lsocket -Bdynamic -lthread -lm -lresolv
/usr/lib/libintl.so -ldl -lm -mt

```

clearmake: Warning: Configuration record will not include objects accessed using view "DROP5A\_sun5.5"

# 16. Ingest

---

This section describes the procedures the Data Ingest Technician (DIT) can use when performing and monitoring ingest of science data. The data ingest process is largely automated, however, the DIT will be required to support hard media operations, resolve problems, periodically monitor ingest operations, and coordinate with the appropriate internal and external entities to resolve resource conflicts. Section 16.1 describes the Ingest subsystem custom software items. Section 16.2 describes how to use the ECS GUI Ingest tool. Section 16.3 describes how to use the HTML Interactive Ingest tool. Section 16.4 describes the Ingest Polling process. Section 16.5 describes the process of recovering from Data Ingest Failures. Section 16.6 describes the Document Ingest process. Section 16.7 describes how to use the ECS Science Data Server Operator tool.

## 16.1 Ingest Custom Software Items

The Ingest custom software items supports the ingest of data into ECS repositories on a routine and ad hoc basis. The software supports a variety of data formats and structures. Ingest data processing and storage functions vary according to attributes of the ingested data such as data type, data format, and the level to which the ingested data has been processed.

The Ingest subsystem is capable of accepting data from a variety of sources including both electronic network interfaces and physical media. Data received is predefined within ECS with regard to expected metadata and metadata characteristics, data types, files, and formats, and means of delivery to ECS in accordance with approved ICDs with external organizations. The following list defines the ECS Ingest Subsystem custom software items:

1. EcInAuto - is the Automated Network Ingest Interface process that provides basic capability to ingest data electronically from an external source.
2. EcInPolling - is the Polling Ingest Client Interface process that creates polling request, detects new files in a specified external location, creates and submits ingest request.
3. EcInInter - is the Interactive Ingest Interface process that provides science users and ECS operators the capability for interactive request to ingest data available on the network.
4. EcInReqMgr - is the Ingest Request Manager process that manages ingest request traffic and processing.
5. EcInGran - is the Ingest Granule Server process that provides services for required preprocessing of data and subsequent insertion into the FSMS.
6. EcInGUI - is Ingest GUI Interface process that provides operators ability to perform ingest from physical media, monitor the status of on-going ingest requests, and modify Ingest configuration parameters.

7. Ingest Database - is a Sybase database that stores and provides access to Ingest Subsystem internal data.

## 16.2 ECS Ingest Tool

The **ECS Ingest** tool has five tab widgets; **Ingest Intro**, **History Log**, **Monitor/Control**, **Operator Tools**, and **Media Ingest**. The **Ingest Intro** screen can be used as a menu path to **Save** or **Print** screens, and **Exit** the Ingest tool. The **History Log** (Section 16.2.2 & Section 16.2.3) is a view only screen which allows the DIT the capability to view ingest activities that have already completed, and to create reports. The **Monitor/Control** (Section 16.2.4) screen provides the DIT the capability to view and update ongoing ingest activities in the system. The **Operator Tools** (Section 16.2.5) are used by the DIT to view and set ingest thresholds. The **Media Ingest** (Section 16.2.6) screen gives the DIT the capabilities to perform media ingest.

The Activity Checklist table that follows provides an overview of the Ingest tool and its functions. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) list the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (**P**) section number or Instruction (**I**) section number where details for performing the task can be found.

**Table 16.2-1. ECS Ingest Tool - Activity Checklist**

Order	Role	Task	Section
1	DIT	Starting the Ingest GUI	(P)16.2.1
2	DIT	Viewing the Ingest History Log	(P)16.2.2
3	DIT	Ingest History Log Reports	(P)16.2.3
4	DIT	Monitoring/Controlling Ingest Requests	(P)16.2.4
5	DIT	Suspending Ingest Requests	(P)16.2.5
6	DIT	Resuming Ingest Requests	(P)16.2.6
5	DIT	Ingest Operator Tools	(P)16.2.7
6	DIT	Physical Media Ingest	(P)16.2.8

### 16.2.1 Starting the Ingest GUI

Starting the Ingest GUI in normal operations will be just a matter of clicking an icon that appears on your desktop. Because the desktop configurations have not been installed to date it will be necessary to follow the interim procedure described below. Starting the Ingest GUI assumes that the applicable servers are running and the DIT has logged in. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of the procedure. If you are new to the system, you should use the following detailed procedures:

- 1 Type **xhost +** at the command shell prompt and then press **Return**.

- 2 Bring up the Ingest GUI server. If the Ingest GUI has not already been brought up. From a SUN workstation or NCD X-Term terminal telnet into the Ingest Server. Enter **telnet <hostname>**. Example **telnet g0dis01**.
- 3 Log into the Ingest Operator workstation using your user identifier and password by typing **YourUserID**, and then press **Return**.
  - A password prompt is displayed.
- 4 Enter **YourPassword**, then press **Return**.
  - You are authenticated as yourself.
- 5 Set your terminal display environment using the following command:  
**setenv DISPLAY <hostname:0.0>**
- 6 Create an xterm window for the Ingest GUI Ingest the following command:  
**xterm -n GUI\_<mode> -sl 5000-sb &**
- 7 Change directory to the directory containing the Ingest GUI command file:  
**cd /usr/ecs/<mode>/CUSTOM/utilities**
- 8 Start the Ingest GUI using the following command:  
**EcInGUIStart <mode>**
  - The **ECS Ingest** tool is opened.
  - The **Ingest Intro** screen is displayed.

**Table 16.2-2. Starting Ingest Operator GUI - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	xhost +	press Return
2	telnet <hostname>	press Return
3	YourUserID	press Return
4	YourPassword	press Return
5	setenv DISPLAY <hostname:0.0>	press Return
6	xterm -n GUI_<mode> -sl 5000-sb &	press Return
7	cd /usr/ecs/<mode>/CUSTOM/utilities	press Return
8	EcInGUIStart <mode>	press Return

### 16.2.2 Viewing the Ingest History Log

The DIT can determine if an Ingest request has been completed by viewing the entries in the **ECS Ingest History Log**. An Ingest request is not logged into the **History Log** until the Ingest

process has been completed. There are four different search criteria that can be used to view **Ingest History Log** entries, the **Start and Stop Date/Time**, the **Data Provider ID**, the **Data Type**, and **Final Request Status**. The DIT must manually enter the **Start and Stop Date/Time** criteria, which displays all Ingest entries that were logged between the start date and time, and the stop date and time. The **Data Provider, Data Type, and Final Request Status** each have a drop down option menu in which to select the criteria. After the DIT enters the search criteria, he/she clicks on the **Display** button to display the log of completed Ingest entries that match the search criteria. The **History Log** displays the following:

Request ID Data Provider, Status, Ingest Type, Start Date, Start Time, End Date, End Time, Total Number of Granules, #Success Granules, Data Vol (MB), File Count, Time to Xfer (min.), Time Preproc (min.), Time to Archive (min.), and Priority Restart Flag.

The DIT can display the same information on the granule level by clicking on the desired entry.

The procedure that follows explains how to view Ingest Log entries using the **History Log**. This example will use the **Start and Stop date/time** filters to display a list of Ingest requests that were logged in the last twenty-four hour period. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of the procedure. If you are new to the system, you should use the following detailed procedures:

- 1** Click on the **ECS Ingest** icon. This assumes that the Ingest GUI is running, if the GUI is not up, then follow the steps for bringing up the Ingest GUI outlined in section 16.2.1.
  - The **ECS Ingest** tool is opened.
  - The **Ingest Intro** screen is displayed.
- 2** Click the **History Log** tab widget.
  - The History Log screen is displayed.
- 3** Click on the Start Date/Time field.
  - The cursor moves to the **month** field.
- 4** Enter the **month**, then press **Tab**.
  - The cursor moves to the **day** field.
- 5** Enter the **day** of the month, then press **Tab**.
  - The cursor moves to the **year** field.
- 6** Enter the **year**, then press **Tab**.
  - The cursor moves to the **hour** field.
- 7** Enter the **hour**, then press **Tab**.
  - The cursor moves to the **min** field.

- 8 Enter the **minute**, then press **Tab**.
  - The cursor moves to the **sec** field.
- 9 Enter the **seconds**, then press **Tab** or, bypass the **second's** field by pressing tab first.
  - The cursor moves to the **month** field for Stop Date/Time.
- 10 Repeat steps 4 through 9 for the **Stop** Date/Time field.
- 11 Select either **Detailed Report** or **Summary Report**.
  - Summary Report requires the operator to select either **Request Level** or **Granule level**.
- 12 Click on the **Display** button.
  - Each ingest request that was completed and logged between the start and end time and date are displayed.
  - Each entry displays the **Request ID, # of Success Granules, External Data Provider, Ingest Type, Processing Start and End Time, Data Volume, Number of Data Sets, and Number of Data Files**.
- 13 Click on an individual **Entry**.
  - The granule level of the selected entry is displayed.
- 14 Select another function by clicking on a GUI tab.
- 15 To exit the ECS Ingest tool, select menu path **File/Exit**.

**Table 16.2-3. View Ingest History Log - Quick-Steps (1 of 2)**

Step	What to Enter or Select	Action to take
1	ECS Ingest icon	single Click
2	History Log	press Return
3	Month (Start Month field)	single Click
4	Enter the Month	press Tab
5	Enter the Day	press Tab
6	Enter the Year	press Tab
7	Enter the Hour	press Tab
8	Enter the Minute	press Tab
9	Enter the Seconds	press Tab
10	Enter the Month	press Tab
11	Enter the Day	press Tab
12	Enter the Year	press Tab

**Table 16.2-3. View Ingest History Log - Quick-Steps (2 of 2)**

Step	What to Enter or Select	Action to take
13	Enter the <b>Hour</b>	press Tab
14	Enter the <b>Minute</b>	press Tab
15	Enter the <b>Seconds</b>	press Tab
16	Select Detailed Report or Summary Report	single Click
17	<b>Display</b> button	single Click
18	Individual <b>Entry</b> record	single Click
19	Select another function	single Click or,
20	<b>File/Exit</b>	single Click and drag

### 16.2.3 Ingest History Log Reports

The **History Log** can support four report formats, a request history log report, a data type history report, a request summary statistics report, and a data type summary statistics report. The reports can be generated for specified time periods and executed on a regular basis. There are two radio buttons above the display box, **Detailed Report** and **Summary Report**. Each report supplies the DIT and operations staff with a view of the ingest request completion performance. The **Detailed Report** gives detailed information about each completed ingest request. The **Summary Report** gives a summary, which includes the average and maximum time taken to perform each step in the ingest process.

The **Detailed Report** can be sorted by **Start and Stop Date & Time**, by **Data Provider**, and by **Data Type**. The default for the **Detailed Report** is DAAC and Start Time. The **Summary Report** should be sorted by **DAAC, Data Provider or Data Types**.

The following procedure will order a **Detailed Report** with the **Data Provider** as the sort criteria, then will clear the screen and order a **Summary Report** using the **Data Type** as the sort criteria. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of the procedure. If you are new to the system, you should use the following detailed procedures:

- 1 Click on the **ECS Ingest** icon. This assumes that the Ingest GUI is running, if the GUI is not up, then follow the steps for bringing up the Ingest GUI outlined in section 16.2.1.
  - The **ECS Ingest** tool is opened.
  - The **Ingest intro** screen is displayed.
- 2 Click on the **History Log** tab widget.
  - The **History Log** screen is displayed.
- 3 Click on the **Data Provider** field.
  - Cursor moves to the **Data Provider** field.

- 4 Enter the **Data Provider**, then press **Tab** or, a drop down option menu may also be used as follows:
  - a) Point the mouse on the arrow to the right of the **Data Provider** field.
  - b) While holding down on the mouse, **highlight** the required **Data Provider**.
  - c) **Release** the mouse button.
  - d) The **Data Provider** that was chosen is now displayed in the **Data Provider** field.
- 5 Click on the **Detailed Report** Radio box.
- 6 Click on the **Display** button.
  - The **Detailed Report** is now displayed.
  - The **Detailed Report** displays the following information; **Request ID, Data Provider, Start and End Time, Completion Status, Restart Flag, Processing Time** (minutes), **Transfer Time** (minutes), **Archive Time** (minutes), **Number of Files, Number of Granules, Number of Success Granules, Data volume** (MB), and **Ingest Type**.
- 7 Click on the **Clear All** button.
  - The display box and criteria fields are cleared.
- 8 Click on the **Data Type** field.
  - The cursor moves to the **Data Type** field.
- 9 Enter the **Data Type**, then press **Tab** or, a drop down option menu may also be used as shown below:
  - a) Point the mouse on the arrow to the right of the **Data Type** field.
  - b) While holding down on the mouse, **highlight** the required **Data Type**.
  - c) **Release** the mouse button. The **Data Type** that was chosen is now displayed in the **Data Type** field.
- 10 Click on the **Summary Report** radio box.
- 11 Click on the **Display** button.
  - The **Summary Report** is displayed.
  - The **Summary Report** displays the following information; **Data Provider, Data Type, Total Requests, Total Errors, Granules** (Avg/Max), **Files** (Avg/Max), **Size -MB** (Avg/Max), **Transfer Time- minutes** (Avg/Max), **Pre-Processing Time-minutes** (Avg/Max), and **Archive Time-minutes** (Avg/Max).
- 12 Print the report by following menu path **File / Print**.
- 13 Select another function by clicking on a widget tab.
- 14 To exit the **ECS Ingest** tool, select menu path **File / Exit**.

**Table 16.2-4. Ingest History Log Reports - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	<b>ECS Ingest</b> icon	single Click
2	<b>History Log</b>	press Return
3	<b>Data Provider</b> field	single Click
4	Enter the <b>Data Provider</b>	press Tab
5	<b>Detailed Report</b> Radio Box	single Click
6	<b>Display</b> button	single Click
7	<b>Clear All</b> button	single Click
8	<b>Data Type</b> field	single Click
9	Enter <b>Data Type</b>	press Tab
10	<b>Summary Report</b> Radio Box	single Click
11	<b>Display</b> button	single Click
12	<b>File / Print</b>	single Click and drag
13	Select another function	single Click or,
14	<b>File/Exit</b>	single Click and drag

#### 16.2.4 Monitoring/Controlling Ingest Requests

The DIT can monitor and control ingest activities using the **Ingest Monitor/Control** tool. The DIT can view all or selective ingest requests in the system. A search can be filtered by using a sort criteria of **Request ID**, **Data Provider**, or **All Requests**. After the search criteria has been selected, the DIT has the option of displaying a **Graphical View** or a **Text View** of the ingest requests. The **Graphical View** displays the Request Id, the Time processing began, and the Percent of the ingest process that has been completed. The **Text View** displays the Request Id, State of Request, External Data Provider, Ingest Type, Request Priority, Start Date & Time, Expiration Date, Total Granules, and Completion Time.

The DIT has the capability of updating ongoing ingest activities in the system. The DIT can Suspend (inactive) Resume, Cancel, and change the Priority (inactive) of a request. To display a request on a granule level, the DIT will double click on the request.

The following procedure will display all requests currently in the system, select and view a request on the granule level, then cancel the request. If you are already familiar with the procedures, you may prefer to use the quick-step tables at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Click on the **ECS Ingest** icon. This assumes that the Ingest GUI is running, if the GUI is not up, then follow the steps for bringing up the Ingest GUI outlined in section 16.2.1.
  - The **ECS Ingest** tool is now open.
  - The **Ingest Intro** screen is displayed.

- 2 Click on the **Monitor/Control** tab widget.
  - The **Monitor/Control** screen is displayed.
- 3 Click on the **All Requests** button, in the radio box.
- 4 Click on the **Text View** button.
  - All ongoing ingest requests are displayed.
- 5 **Double Click on the desired request line.**
  - Text is displayed at the granule level.
- 7 Click on the **Cancel** button, from the toggle control box.
- 8 Click on the **OK** push button.
  - A confirmation dialog box pops up.
- 9 Click the **Yes** button in the confirmation dialog box.
  - Ingest request has been canceled.
- 10 Select another function by clicking on a widget tab.
- 11 To exit the **ECS Ingest** tool, select menu path **File / Exit**.

**Table 16.2-5. Monitoring/Controlling Ingest Requests - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	<b>ECS Ingest</b> icon	<b>single Click</b>
2	<b>Monitor/Control</b> tab widget	<b>single Click</b>
3	<b>All Requests</b> button	<b>single Click</b>
4	<b>Text View</b> button	<b>single Click</b>
5	<b>Highlight</b> individual account	<b>double Click</b>
6	<b>Cancel</b> button	<b>single Click</b>
7	<b>OK</b> push button	<b>single Click</b>
8	<b>Yes OK</b> button in confirmation box	<b>single Click</b>
9	Select another function	<b>single Click or</b>
10	<b>File / Exit</b>	<b>single Click and drag</b>

### 16.2.6 Resuming Ingest Requests

After the matter that caused an ingest request to be suspended from processing has been taken care of, the processing can be resumed. If you are already familiar with the procedure to resume an ingest request, you may prefer to use the quick-step table at the end of the procedure. If you are new to the system, you should use the following detailed procedures. The procedure starts with the assumption that all applicable servers and the **ECS Ingest** GUI are currently running

and the ingest that was suspended by the system's automated process is being displayed on the **Monitor/Control** tab.

- ◆ In the Ingest GUI Monitor/Control screen
  - ◆ Select the ingest request which has request state of “Suspended”
  - ◆ Select the Resume button on the Ingest GUI
  - ◆ Select the OK button on the Ingest GUI
  - ◆ Confirm the resumption by clicking “Yes” button on the pop-up window
1. **Verify that the request is archived on the Ingest GUI Monitor/Control screen.**

**Table 16.2-6. Resuming Ingest Requests - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	Highlight the request to be resumed	Single Click
2	<b>Resume</b> button	Single Click
3	<b>OK</b> button	Single Click
4	<b>Yes button in the confirmation box</b>	Single Ckick

## 16.2.7 Cancel Ingest Request

### 16.2.7.1 Cancel Ingest Request on the Request Level

In some cases it will be necessary to cancel an Ingest Request. If you are already familiar with the procedure to cancel an ingest request, you may prefer to use the quick-step table at the end of the procedure. If you are new to the system, you should use the following detailed procedures. The procedure starts with the assumption that all applicable servers and the **ECS Ingest** GUI are currently running and the ingest request to be canceled is being displayed on the **Monitor/Control** tab.

- ◆ In the Ingest GUI Monitor/Control screen
- ◆ select the ingest request on the screen
- ◆ Single click on the desired request to be cancelled
- ◆ Select the Cancel button on the screen
- ◆ Select the OK button the screen
- ◆ **Confirm the cancellation of the selected request by clicking “Yes” on the pop-up window**
- ◆ **Verify the cancellation of the selected request by viewing the Request state in the Monitor/Control display.**

### 16.2.7.2 Cancel Ingest Request on Granuel Level

- ◆ In the Ingest GUI Monitor/Control screen
- ◆ double click the request to display the granule information
- ◆ Single click to select the desired granule to be cancelled

- ◆ Select the Cancel button on the screen
- ◆ Select the OK button on the screen
- ◆ Confirm the cancellation of the selected granule by clicking “Yes” on the pop-up window
- ◆ Verify the cancellation of the selected granule by viewing the granule state in the Monitor/Control display.

**Table 16.2-7. Running Cancel Ingest Requests - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	Highlight the request to be Cancelled	Single Click
2	<b>Cancel</b> button	Single Click
3	<b>OK</b> button	Single Click
4	<b>Yes button in confirmation box</b>	Single Click

### 16.2.8 Cancel Suspended Ingest Request

In some cases it will be necessary to cancel a suspended Ingest Request. If you are already familiar with the procedure to cancel a suspended ingest request, you may prefer to use the quick-step table at the end of the procedure. If you are new to the system, you should use the following detailed procedures. The procedure starts with the assumption that all applicable servers and the **ECS Ingest** GUI are currently showing (the Monitor/Control) the suspended ingest request to be canceled.

#### 16.2.8.1 Ingest Cancel Suspended Request

- ◆ In the Ingest GUI Monitor/Control screen
- ◆ Select the ingest request which has request state of “Suspended”
- ◆ Select the Cancel button on the Ingest GUI
- ◆ Select the OK button on the Ingest GUI
- ◆ Confirm the cancellation by clicking “Yes” button on the pop-up window

#### 16.2.8.2 Cancel Partially Suspended Ingest Request

1. Using Ingest GUI select Monitor/Control function to monitor Request processing
  - ◆ Select Monitor/Control
  - ◆ Select Text View
  
2. In the Ingest GUI Monitor/Control screen
  - ◆ Double click the request to display granule information

The granule state on the Ingest GUI Monitor/Control screen changes from “Transferring” to “Suspended”.

The request state on the Ingest GUI Monitor/Control screen changes from “Active” to Partially “Suspended”

3. In the Ingest GUI Monitor/Control screen
  - ◆ Select the ingest request which has request state of Partially “Suspended”
  - ◆ Select the cancel button on the Ingest GUI
  - ◆ Select the OK button on the Ingest GUI
  - ◆ Confirm the cancellation by clicking “Yes” button on the pop-up window

**Table 16.2-8. Running Cancel Suspended and Partially Suspended Ingest Requests - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	Highlight the request to be Cancelled	Single Click
2	<b>Cancel</b> button	Single Click
3	<b>OK</b> button	Single Click
4	<b>Yes</b> button in confirmation box	Single Click

### 16.2.9 Ingest Operator Tools

The **Ingest Operator Tools** give the Production Monitor (PM) and/or DIT the capability to set and view ingest thresholds. The ingest thresholds are broken up into two groups: System-wide and Data Provider specific. To edit the Data Provider click on the **Modify External Data Provider/User Information tab stack** just below the tab widgets (Section 16.2.7.1). To make System-Wide edits click on the **Modify System Parameters tab stack** (Section 16.2.7.2). When a DIT reviews the previous day’s Ingest activity, he/she may discover that there is a backlog of requests for ingest. After reviewing the report he/she may invoke the **Ingest Operator Tool**, then increase the System or Data Provider volume threshold to support a catch-up mode. Another tool, **File Transfer** (Section 16.2.7.3), allows the DIT to transfer requested files to optional remote sites.

The Activity Checklist table that follows provides an overview of the Ingest Operator tool. Column one (Order) shows the order in which tasks should be accomplished. Column two (Role) list the Role/Manager/Operator responsible for performing the task. Column three (Task) provides a brief explanation of the task. Column four (Section) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

**Table 16.2-9a. Ingest Operator Tools - Activity Checklist**

Order	Role	Task	Section
1	PM/DIT	Modify External Data Provider/User Information	(P) 16.2.7.1
2	PM/DIT	Modify System Parameters	(P) 16.2.7.2
3	DIT	File Transfer	(P) 16.2.7.3

### 16.2.9.1 Modify External Data Provider User Information

The PM or DIT can edit the FTP User Name, FTP Password, Email Address, HTML Password, CDS Entry Name, Server Destination UUID, Volume Threshold, Request Threshold, Priority Level, and Notify Parameters when the **Modify External Data Provider User Information tab stack** is selected.

The **Volume Threshold** is the maximum data volume allowed to be ingested concurrently by the data provider in one day. The **Request Threshold** is the maximum number of requests allowed to be processed by the data provider in one day. One day is a 24 hour period beginning when the first request is received. Each Data Provider is given a data **Priority Level**, which can effect when the ingest data is processed. When the Data Providers thresholds have been reached, the system will no longer process ingest requests for that specific Data Provider until the following day. If the DIT determine that this specific Data Provider's data needs to be processed, he/she can change the thresholds to allow the system to accept the request.

The procedure that follows explains how to edit the Data Provider's **Email Address, Volume Threshold, Request Threshold** and **Priority Level**. If you are already familiar with the procedures, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure.

- 1 Click on the **ECS Ingest** icon. This assumes that the Ingest GUI is running, if the GUI is not up, then follow the steps for bringing up the Ingest GUI outlined in section 16.2.1.
  - The **ECS Ingest** tool is opened.
  - The **Ingest Info** screen is displayed.
- 2 Click on the **Operator Tools** tab widget.
  - The **Operator Tool** is opened.
- 3 Click on the **Modify External Data Provider/User Information** tab.
  - The Data Provider screen is displayed.
- 4 Click on the **Data Provider** field.
  - Cursor moves to the **Data Provider** field.
- 5 Enter the **Data Provider** name, then press **Tab** or, a drop down option menu may also be used as follows:
  - a) Point the mouse on the arrow to the right of the **Data Provider** field.
  - b) While holding down the mouse, **highlight** the chosen **Data Provider**.
  - c) **Release** the mouse button. The **Data Provider** that was chosen is now displayed in the **Data Provider** field.
- 6 Click on the **Email Address** field.
  - Cursor moves to the **Email Address** field.

- 7 Enter the **Email Address**, then press **Tab**.
  - Cursor moves to the new **Volume Threshold** field.
- 8 Enter the **New Volume Threshold**, then press **Tab**.
  - Cursor moves to the new **Request Threshold** field.
- 9 Enter the **New Request Threshold**, then press **Tab**.
  - Cursor moves the new **Priority Level** field.
- 10 Enter the new **Priority Level**, then press **Tab** or, a drop down option menu may also be used as follows:
  - a) Point the mouse on the arrow to the right of the **New Priority Level** field.
  - b) While holding down the mouse, **highlight** the chosen **Priority Level**.
  - c) **Release** the mouse button. The **Priority Level** that was chosen is now displayed in the **Priority Level** field.
- 11 Click on the **OK** push button.
  - Invokes changes to the system.
- 12 Select another function by clicking on a widget tab.
- 13 To exit the **ECS Ingest** tool, select menu path **File / Exit**.

**Table 16.2-9b. Modify External Data Provider/  
Interactive User Information - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	<b>ECS Ingest</b> icon	<b>Single Click</b>
2	<b>Operator Tools</b> Tab widget	<b>Single Click</b>
3	<b>Modify External Data Provider User Information</b> tab	<b>Single Click</b>
4	<b>Data Provider</b> field	<b>Single Click</b>
5	Enter the <b>Data Provider Name</b>	<b>Press Tab</b>
6	<b>Email Address</b> field	<b>Single Click</b>
7	Enter the <b>Email Address</b>	<b>Press Tab</b>
8	Enter the <b>New Volume Threshold</b>	<b>Press Tab</b>
9	Enter the <b>New Request Threshold</b>	<b>Press Tab</b>
10	Enter the <b>New Priority Level</b>	<b>Press Tab</b>
11	<b>OK</b> push button	<b>Single Click</b>
12	Select another function/widget	<b>Single Click</b>
13	<b>File / Exit</b>	<b>Single Click and drag</b>

### 16.2.9.2 Modify System Parameters

The **Modify System Parameters** tool allows the PM or DIT to edit the System Volume Threshold, to set the maximum number of ingest requests allowed to be processed concurrently, to set the number of transfer retry attempts and the retry intervals when network failure occurs, to set the monitor time for a completed request, and the frequency of screen update.

In the following procedure the DIT will invoke the **ECS Ingest** tool then select the **Operator Tools** tab widget. From the **Operator Tools** display screen the DIT will click on the **Modify System Parameters** tab stack, then edit the **Volume Threshold, Request Threshold, Communication Retry Count, Communication Retry Interval, Monitor Time, and Screen Update Time** fields. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of the procedure. If you are new to the system, or have not performed this task recently you should use the following detailed procedure.

- 1 Click on the **ECS Ingest** icon. This assumes that the Ingest GUI is running, if the GUI is not up, then follow the steps for bringing up the Ingest GUI outlined in section 16.2.1.
  - The **ECS Ingest** tool is opened.
  - The **Ingest Intro** screen is displayed.
- 2 Click on the **Operator Tools** tab widget.
  - The **Operator Tool** is opened.
- 3 Click on the **Modify System Parameters** tab.
  - The **System Parameters** screen is displayed.
- 4 Click on the **New Volume Threshold** field.
  - The cursor moves to the **New Volume Threshold** field.
- 5 Enter the **New Volume Threshold**, then press **Tab**.
  - The Maximum data volume to be ingested concurrently is changed.
  - The cursor moves to the **New Request Threshold** field.
- 6 Enter the **New Request Threshold**, then press **Tab**.
  - The Maximum number of ingest requests to be processed concurrently is changed.
  - The cursor moves to the **New Communication Retry Count** field.
- 7 Enter the **New Communication Retry Count**, then press **Tab**.
  - The number of retries to perform when a communication failure is encountered with the external data provider is changed.
  - The cursor moves to the **New Communication Retry Interval** field.
- 8 Enter the **New Communication Retry Interval**, then press **Tab**.
  - The number of minutes to wait between retries when attempting to communicate with the External Data Provider.

- The cursor moves to the **Monitor Time** field.
- 9** Enter the **New Monitor Time**, then press **Tab**.
- The **Monitor Time** tells the system how often to monitor the network for ingest requests.
  - The cursor moves to the **Screen Update Time** field.
- 10** Enter the **New Screen Update Time**, then press **Tab**.
- The **Screen Update Time** tells the system how often to update the **Monitor/Control** screen, which shows the current ingest request activity.
- 11** Click on the **OK** push button.
- Implements the changes entered.
- 12** Select another function by clicking on a widget tab.
- 13** To exit the **ECS Ingest** tool, select menu path **File / Exit**.

**Table 16.2-9c. Modify System Parameters - Quick-Step Procedures**

Step	What to Enter or Select	Action to Take
1	<b>ECS Ingest</b> icon	<b>Single Click</b>
2	<b>Operator Tools</b> Tab widget	<b>Single Click</b>
3	<b>Modify System Parameters</b> tab	<b>Single Click</b>
4	<b>New Volume Threshold</b>	<b>Single Click</b>
5	Enter the <b>New Volume Threshold</b>	<b>Press Tab</b>
6	Enter the <b>New Request Threshold</b>	<b>Press Tab</b>
7	Enter the <b>New Communication Retry Count</b>	<b>Press Tab</b>
8	Enter the <b>New Communication Retry Interval</b>	<b>Press Tab</b>
9	Enter the <b>New Monitor Time</b>	<b>Press Tab</b>
10	Enter the <b>New Screen Update Time</b>	<b>Press Tab</b>
11	<b>OK</b> push button	<b>Single Click</b>
12	Select another function/widget	<b>Single Click</b>
13	<b>File / Exit</b>	<b>Single Click and drag</b>

### 16.2.9.3 File Transfer

The **File Transfer** tool allows the DIT to transfer System Management Center (SMC) History and Generic files to the Science Community. The tool allows the DIT to build a SMC History File or select any file to be transferred from a specified source of origin to a destination desired by the user.

In the following procedure the DIT will invoke the **ECS Ingest** tool then select the **Operator Tools** tab widget. From the **Operator Tools** display screen the DIT will click on the **File Transfer** tab, then edit the **Volume Threshold, Request Threshold, Communication Retry**

**Count, Communication Retry Interval, Monitor Time, and Screen Update Time** fields. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of the procedure. If you are new to the system, or have not performed this task recently you should use the following detailed procedure.

- 1** Click on the **ECS Ingest** icon. This assumes that the Ingest GUI is running, if the GUI is not up, then follow the steps for bringing up the Ingest GUI outlined in Section 16.2.1.
  - The **ECS Ingest** tool is opened.
  - The **Ingest Intro** screen is displayed.
- 2** Click on the **Operator Tools** tab widget.
  - The **Operator Tool** is opened.
- 3** Click on the **File Transfer** tab.
  - The **File Transfer** screen is displayed.
- 4** Click on **Build SMC History File** or the **Generic File Transfer** push button.
  - The **Build SMC History File** creates selected file for operator transfer.
  - The Generic File transfer allows any directory or file to be transferred.
- 5** Click on the **New Filter** field.
  - The Cursor moves enters the field.
- 6** Enter the **New Filter**, then press **Tab**.
  - The Cursor moves to **Directories** field.
- 7** At **Directories**, select desired table entry, then press **Tab**.
  - The directory is entered into the **Selection** field.
  - The Cursor moves to **Files** field.
- 8** At **Files**, select desired table entry, then press **Tab**.
  - The file is added to the path entered in the Selection field.
  - The Cursor moves to **Selection** field.
- 9** Click on the **OK** push Button in the **Transfer Origin Box**.
- 10** Enter the **New Transfer Destination** in the Transfer Destination field.
- 11** Click on the **OK** push button for **File Transfers** window.
- 12** Select another function by clicking on a widget tab.
- 13** To exit the **ECS Ingest** tool, select menu path **File / Exit**.

**Table 16.2-9d. File Transfer- Quick-Step Procedures**

Step	What to Enter or Select	Action to Take
1	ECS Ingest icon	single Click
2	Operator Tools Tab widget	single Click
3	File Transfer toggle tab	single Click
4	Click SMC Build History File or Generic File Transfer	single click
6	Click the <b>New Filter</b> , enter filter	press Tab
7	Enter the <b>New Directories</b>	press Tab
8	Enter the <b>New Files</b>	press Tab
9	<b>OK</b> push button in <b>Transfer Origin</b>	press Tab
10	Enter the <b>New Transfer Destination</b>	press Tab
11	<b>OK</b> push button for window	single Click
12	Select another function/widget	single Click
13	<b>File/Exit</b>	single Click and drag

### 16.2.10 Physical Media Ingest

When the Science Community sends a data ingest request, the DIT can ingest data from physical media into the DAAC using the **Media Ingest** tool. Table 16.2-10a identifies the different types of physical media used within the ECS system ingest process. Each cartridge is identified by means of a bar code label that shows the media number.

**Table 16.2-10a. Physical Media Ingest Types**

Media Type	Media Name	Media Purpose	Capacity
8mm	8 Millimeter cartridges	Ingest	160m 7Gb
D3	D3 Cartridge tape	Ingest (EDC Only)	50 Gigabyte

Activity Checklist Table 16.2-10b, provides an overview of **Physical Media Ingest** activities. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) list the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (**P**) section number or Instruction (**I**) section number where details for performing the task can be found. Table 16.2-10b. Physical Media Ingest - Activity Checklist

**Table 16.2-10b Activity CheckList**

<b>Order</b>	<b>Role</b>	<b>Task</b>	<b>Section</b>
1	DIT	Performing Media Ingest from 8mm Media Tape	(P) 16.2.8.2
2	DIT	Performing Media Ingest from D3 Tape (EDC only)	(P) 16.2.8.3

**16.2.10.1 Accessing D3/8mm/Tape Drives and Stackers**

This section describes how to access the 8mm and D3 tapes and drives as used by Media Ingest. Both types of tapes can be used for physical media data requests for the Ingest system. The DIT can start the Ingest process by accessing the appropriate tape, utilizing the Ingest GUI Interface and the tape stacker units. Each 8mm stacker contains two tape drives and can store up to 10 tapes.

**Note: While data is being read from tape the GUI will not allow another function to be selected until data transfer is complete**

**16.2.10.2 Performing Media Ingest from 8mm Tape**

A **Delivery Record** file is required for **Media Ingest**. The **Delivery Record** file can either be embedded in the hard media or be made available electronically. If it is not embedded on the hard media, the **Delivery Record** must be in a specified network directory. The external data provider must ftp the **Delivery Record** file into the location prior to delivering the hard media. The **Delivery Record** identifies parameters such as data source, number of files, and location of data. The DIT will invoke the **ECS Ingest** tool, then click on the **Media Ingest** tab widget to display the screen.

In the following procedure the DIT will invoke the **ECS Ingest** tool then select the **Media Ingest** tab widget. A drop down menu can be used to select the 8mm Media Type. Enter Stacker ID and Stacker Slot ID for 8mm tape ingest. Another drop down menu can be used to select the Data Provider. Enter **Media Volume ID (Barcode)** in the the **Media Volume ID** field.

**Note: Only one tape can be loaded and Ingested at a time.**

The **Data Delivery Record File Location** can be selected by clicking on the **On Network**, or **Embedded in Media** buttons located in the radio box. The file name supplied by the Data Provider is entered in the **Data Delivery Record File Name** field. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of the procedure. If you are new to the system, or have not performed this task recently you should use the following detailed procedure.

- 1 Click on the **ECS Ingest** icon. This assumes that the Ingest GUI is running, if the GUI is not up, then follow the steps for bringing up the Ingest GUI outlined in section 16.2.1.
  - The **ECS Ingest** tool is opened.
  - The **Ingest Intro** screen is displayed.
- 2 Click on the **Media Ingest** tab widget.
  - The **Media Ingest** screen is displayed.
- 3 Click on the **Media Type** field.
  - Cursor moves to the **Media Type** field.
- 4 Choose the **Media Type**, then press **Tab**.
  - Cursor moves to the **Stacker ID** field.
- 5 Enter the stacker ID in the **Stacker ID** field, then press **Tab**.
  - Cursor moves to the **Stacker Slot ID** field.
- 6 Place the tape cartridge in a stacker slot.
- 7 Enter the stacker slot ID in the **Stacker Slot ID** field, then press **Tab**.
  - Cursor moves to the **Data Provider** field.
- 8 Enter the **Data Provider**, then press **Tab**.
  - A drop down option menu can also be used.
  - The cursor moves to the **Media Volume ID (Barcode)** field.
- 9 Enter the **Media Volume ID** number from the tape.
  - The **Media Volume ID** number is displayed in the display box below the **Media Volume ID** field.
8. Enter the **Data Delivery Record File Name** that is supplied by the Data Provider
- 10 Click on the **On Network** button located in the Radio Box.
  - This tells the system that the **Delivery Record** is located on the Network.
  - If the **Delivery Record** is embedded in the tape, select the **Embedded in Media** button.
- 11 **Click** on the **OK** button.
  - Data transfer is initiated.
- 12 Select another function by clicking on a widget tab.
- 13 To exit the **ECS Ingest** tool, select menu path **File / Exit**.

**Table 16.2-10c. Performing Media Ingest from 8mm Tape - Quick Steps Procedures**

<b>Step</b>	<b>What to Enter or Select</b>	<b>Action to Take</b>
<b>1</b>	<b>ECS Ingest</b> icon	<b>Single Click</b>
<b>2</b>	<b>Media Ingest</b> Tab widget	<b>Single Click</b>
<b>3</b>	<b>Media Type</b> field	<b>Single Click</b>
<b>4</b>	Enter the <b>Media Type</b> (8mm)	<b>Press Tab</b>
<b>5</b>	Enter the Stacker ID	<b>Press Tab</b>
<b>6</b>	Place the 8mm tape cartridge in a 8mm stacker slot	
<b>7</b>	Enter the Stacker Slot ID	<b>Press Tab</b>
<b>8</b>	Enter the <b>Data Provider</b>	<b>Press Tab</b>
<b>9</b>	Enter the <b>Media Volume ID</b>	<b>Press Tab</b>
<b>10</b>	<b>On Network</b> button	<b>Single Click</b>
<b>11</b>	<b>OK</b> push button	<b>Single Click</b>
<b>12</b>	Select another function/widget	<b>Single Click</b>
<b>13</b>	<b>File / Exit</b>	<b>Single Click and drag</b>

### 16.2.10.3 Performing Media Ingest from D3 Tape (EDC Only)

This section describes how to access the StorageTek Controller/Transport Redwood SD-3 for D3 tape processing as used by Media Ingest. The DIT can access the information stored on a D3 tape by utilizing the Ingest GUI Interface.

Once the extraction command has been executed the system will read the D3 tape from the header label then access the data needed for Ingest processing. Upon completion of the process the D3 tape will automatically rewind and eject itself from the tape drive.

If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of the procedure. If you are new to the system, or have not performed this task recently you should use the following detailed procedure.

- 1** Compare the received medium to a media ingest readiness checklist to verify that everything needed for the media ingest is in order.
  - The media ingest readiness checklist includes the following types of checks:
    - PDR file is available, either placed on the network by the data provider or embedded in the medium.
    - Data provider has identified the PDR file name.
    - There is a unique Media Volume ID for each tape received.
    - An appropriate device (tape drive) is available to support the data transfer.
  
- 2** Verify that the display above the D3 tape unit indicates “\*”.
  
- 3** Verify that there is **no** tape cartridge inserted in the D3 tape unit.
  - Remove the tape cartridge in the D3 tape unit (if applicable).

- 4 Verify that the **Ready** light is illuminated in the second row of the panel near the window of the D3 tape unit where the tape is inserted.
  - If the **Ready** light is not illuminated, push the **Ready** button.
- 5 Click on the **ECS Ingest** icon. This assumes that the Ingest GUI is running, if the GUI is not up, then follow the steps for bringing up the Ingest GUI outlined in section 16.2.1.
  - The **ECS Ingest** tool is opened.
  - The **Ingest Intro** screen is displayed.
- 6 Click on the **Media Ingest** tab widget.
  - The **Media Ingest** screen is displayed.
- 7 Click on the **Media Type** field.
  - Cursor moves to the **Media Type** field.
- 8 Enter the **Media Type**, then press **Tab**.
  - To enter the type of medium (i.e., **D3 Tape**) click and hold on the option button to the right of the **Media Type** field, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.
  - The selected type of medium is displayed in the **Media Type** field.
  - Cursor moves to the **Data Provider** field.
- 9 Enter the **Data Provider**, then press **Tab**.
  - A drop down option menu can also be used.
  - To enter the data provider (e.g., **SCF**) click and hold on the option button to the right of the **Data Provider** field, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.
  - The selected data provider is displayed in the **Data Provider** field.
  - The cursor moves to the **Media Volume ID** field.
- 10 Enter the **Media Volume ID** number from the tape in the **Media Volume Id (Barcode)** field.
- 11 Click on the **On Network** button located in the Radio Box.
  - This tells the system that the **Delivery Record** is located on the Network.
  - If the **Delivery Record** is embedded in the tape, select the **Embedded in Media** button.
- 12 Enter the data delivery record file name (e.g., **scf11a.PDR**) in the **Data Delivery Record File Name** field.
- 13 Click (**once only**) on the **OK** button at the bottom of the GUI.
  - The GUI **OK** button is sensitive to being clicked more than once. It is important to click it dead center once only or D3 ingest is likely to fail.

- 14** Insert the tape cartridge in the D3 tape drive.
- The tape cartridge must be inserted within one minute of clicking on the **OK** button on the Ingest GUI.
  - The message "Loading" should be displayed on the D3 tape drive unit panel.
  - Then the message "Ready" should be displayed on the D3 tape drive unit panel and the "ready" light should blink on and off for a while.
  - Avoid clicking the mouse on the Ingest GUI while the D3 tape unit is reading the tape.
  - Once the extraction command has been executed, the system reads the D3 tape from the header label, then accesses the data needed for Ingest processing.
- 15** When the data transfer has been completed, wait for the message "Ingest Request Completed."
- The messages "Rewinding" then "Unloading" should be displayed on the D3 tape drive unit panel as the D3 tape drive unit rewinds and unloads after the data transfer.
  - Upon completion of the process the D3 tape automatically rewinds and ejects itself from the tape drive.
- 16** Remove the tape cartridge from the D3 tape drive.
- 17** Select another function by clicking on a widget tab.
- 18** To exit the **ECS Ingest** tool, select menu path **File / Exit**.

**Table 16.2-10d. Performing Media Ingest from D3 Tape - Quick Steps Procedures**

<b>Step</b>	<b>What to Enter or Select</b>	<b>Action to Take</b>
<b>1</b>	<b>ECS Ingest</b> icon	<b>Single Click</b>
<b>2</b>	<b>Media Ingest</b> Tab widget	<b>Single click</b>
<b>3</b>	<b>Media Type</b> field	<b>Single Click</b>
<b>4</b>	Enter the <b>Media Type</b> (D3)	<b>Press Tab</b>
<b>5</b>	Enter the <b>Data Provider</b>	<b>Press Tab</b>
<b>6</b>	Enter the <b>Media Volume ID</b>	<b>Press Tab</b>
<b>7</b>	<b>On Network</b> button	<b>Single Click</b>
<b>8</b>	<b>Enter Data Delivery Record File Name</b>	
<b>9</b>	<b>OK</b> push button	<b>Single Click</b>
<b>10</b>	Select another function/widget	<b>Single Click</b>
<b>11</b>	<b>File / Exit</b>	<b>Single Click and drag</b>

#### 16.2.10.4 Ingest EDOS D3 (GDAAC)

1. After D3 tape(s) are received from EDOS, they must be manual placed into the ingest polling directory. Use the following steps to complete the operational task.
2. On g0drg01 log-on using the amass account and password. Once logged on vary drive 8 off-line, using the following command: `drivestat -i 8`

Note drive 8 is used as an example any drive could be used.

3. Insert the D3 EDOS tape into the archive using the following steps:

#### Log-on the g0drs04 system using the ACSLS account & password.

Enter the D3 media into the StorageTek archive. Using the *ACSL*S window type:  
*enter 0,0,0*

Prior to this write down the *volume label* for reference. Note the D3 media must be inserted in the Upper most left corner of the input/output bin. Close the input/output door after the D3 media has been placed in to the bin. The media is now loaded into the Archive.

1. Move the media into Drive 8 using the following commands (note user is still on the g0drs04 box):

**mount volume label 0,0,1,3**

2. Read the tape contents using the following command (user now back on g0drg01 box): This process could take several iterations to read the complete tape.

*tar -tvf /dev/rmt/tps94d4nr*

3. Once the read completes. Extract the data from tape to a holding location large enough to store all the data on the tape. This will be some place on the L0\_buffer (g0drg01). Again this could take several iterations. But it will be the same number of trys as in step 5. To Extract the data type:

*tar -xvf /dev/rmt/tps94d4nr /L0\_buffer/predetermined location*

4. When the extract completes. The ingest data must be identified. Once the files to be ingested have been identified they must be transferred to *g0icg01* polling directory location: */usr/ecs/<MODE>/icl/a/data/pollEDOS..* Recommended transfer method: *dd if=data location/filename of=/usr/ecs/<MODE>/icl/a/data/pollEDOS/filename bs=4096*
5. Once all the files that make up a granule have been transferred to *g0icg01* 2 files must be created using the following utility:

*/tools/share/bin/genPDRS5A <data type name> <first PDS file on the granule> <usr/ecs/<MODE>/icl/a/data/pollEDOS>*

6. Have the ingest technician verify the transfer completes successfully. Repeat steps 7 & 8 until all granules have been ingested.

### **16.2.10.5 Ingest - ASTER On Demand Processing**

ASTER On Demand Processing generally refers to the generation of products that are not included as part of the standard ASTER L1A and L1B products that are sent from ASTER GDS to ECS. These On Demand Products include, but may not be limited to: ASTER Digital Elevation Map (DEM), Higher Level ASTER Products, and other non-standard ASTER products that may be ordered from the user community. There are three items associated with On Demand Processing; (a) The production of Digital Elevation Maps; (b) Handling requests associated with non-standard L1B and (c) Handling requests associated Higher level(s) products L1B products.

#### **(a) ON DEMAND PROCESSING - DIGITAL ELEVATION MAPS (DEM)**

This type of On Demand Processing requires that the DAAC Operator produce the DEM manually at the DAAC. Using the On-Demand Form (ODFRM), the user submits the request to ECS. Upon receiving the request (the ODFRM and e-mail) to produce the DEM, the DAAC Operator takes the following action:

- 1.) From the granule information present on the ODFRM and in the e-mail, the DAAC Operator creates the DEM.
- 2.) Using the Ingest Sub-system, the DAAC Operator Ingests the DEM Product
- 3.) Using the Science Data Server, the DAAC Operator Archives the DEM product
- 4.) The DAAC Operator notifies ECS that the product is available.

#### **(b) ON DEMAND PROCESSING - NON- STANDARD L1B**

In this type of On Demand Processing, using the On-Demand Form (ODFRM) web page (CLS), the user selects a non-standard product and submits the request directly to ASTER GDS, Japan. The processing of non-standard L1B is conducted at ASTER GDS, Japan. Upon notification that the product is available, the DAAC Operator will Ingest and archive the product in the Science Data Server in accordance with section 16.2.8 of this document. Using the email process, the DAAC Operator will notify the user that the product is available.

#### **(c) ON DEMAND PROCESSING OF HIGHER LEVEL(S) L1B PRODUCTS**

is accomplished at ASTER GDS, Japan The product processing is accomplished Unlike the standard L1A and L1B products

### 16.3.1 Creating a Data Availability Notice (DAN) (descoped)

Before a Data Provider can ingest data into the ECS system a **Data Availability Notice (DAN)** must be sent to the Subsystem indicating that data is ready for transfer. The **DAN** specifies the parameters needed to identify what files are ready for pickup, the location, and how long it will be available in that location. The maximum message length allowed for a DAN is 1 megabyte. More than one DAN may be sent if needed.

Each DAN includes a Message Header, Exchange Data Unit (EDU) Label and Parameter Value Language (PVL) Statements. The Message Header and labels are in a contiguous string, followed by the PVL. The labels and PVL statements are in Standard Formatted Data Unit (SFDU) format. More information about SFDU and PVL can be found in the following documents: Consultative Committee for Space Data Systems (CCSDS), Standard Formatted Data Units--Structure and Construction Rules, Consultative Committee for Space Data Systems (CCSDS) and Parameter Value Language Specification (CCSD0006, blue book).

The system will log the receipt of the **DAN** and assign a request ID number. A summary of the **DAN** contents is placed in the event log. The Ingest subsystem generates a corresponding ingest request and stores the request on a prioritized list. A **Data Availability Acknowledgment (DAA)** is sent from Ingest to the Data Provider indicating readiness to ingest the data identified in the **DAN**.

The procedure that follows explains the information needed to create a **DAN**. This procedure will assume the Data Provider has already used an xterm or SUN to obtain the **DAN** template. If you are familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the detailed procedure that follows.

- 1 The **DAN Sequence Number** is system generated, therefore press **Tab**.
  - The cursor moves to the **Expiration Time** field.
- 2 Enter the **Expiration Time**, then press **Return**.
  - Time for data deletion from originating system.
  - The cursor moves to the **Originating System** field.
- 3 Enter the **Originating System**, then press **Return**.
  - The originator of the DAN.
  - The cursor moves to the **Aggregate Length** field.
- 4 Enter the **Aggregate Length**, then press **Return**.
  - Total number of bytes to transfer (Sum for all files).
  - The cursor moves to the **Total File Count** field.
- 5 Enter the **Total File Count**, then press **Return**.
  - Total number of files to transfer.
  - The Cursor moves to the **Object** field.

- 6 Enter the **Object**, then press **Return**.
  - The start of file group parameters (repeat for each group of files).
  - The cursor moves to the **Data Type** field.
- 7 Enter the **Data Type**, then press **Return**.
  - ECS Data Type.
  - Cursor moves to **Node Name** field.
- 8 Enter the **Node Name**, then press **Return**.
  - Name of the network node on which the file resides.
  - The cursor moves to the **Descriptor** field.
- 9 Enter the **Descriptor**, then press **Return**.
  - The string.
  - The cursor moves to the **Object** field.
- 10 Enter the **Object**, then press **Return**.
  - Start of Detached SFDU Header File Object, if appropriate.
  - The cursor moves to the **File ID** field.
- 11 Enter the **File ID**, then press **Return**.
  - The File Name.
  - The cursor moves to the **File Type** field.
- 12 Enter the **File Type**, then press **Return**.
  - The File Data Type.
  - The cursor moves to the **Directory ID** field.
- 13 Enter the **Directory ID**, then press **Return**.
  - The file directory name (i.e., path name).
  - The cursor moves to the **File Size** field.
- 14 Enter the **File Size**, then press **Return**.
  - The length of the file in bytes.
  - The cursor moves to the **End Object** field.
- 15 Enter the **End Object**, then press **Return**.
  - The End Detached SFDU Header File Object.

**Table 16.3-2. Creating Data Availability Notice (DAN) - Quick-Step Procedures (1 of 2)**

Step	What to Enter or Select	Action to Take
1	DAN Sequence Number (system generated)	press Tab
2	Enter the Expiration Time	press Return

**Table 16.3-2. Creating Data Availability Notice (DAN) - Quick-Step Procedures (2 of 2)**

Step	What to Enter or Select	Action to Take
3	Enter the <b>Originating System</b>	press Return
4	Enter the <b>Aggregate Length</b>	press Return
5	Enter the <b>Total File Count</b>	press Return
6	Enter the <b>Object</b>	press Return
7	Enter the <b>Data Type</b>	press Return
8	Enter the <b>Node Type</b>	press Return
9	Enter the <b>Descriptor</b>	press Return
10	Enter the <b>Object</b>	press Return
11	Enter the <b>File ID</b>	press Return
12	Enter the <b>File Type</b>	press Return
13	Enter the <b>Directory ID</b>	press Return
14	Enter the <b>File Size</b>	press Return
15	Enter the <b>End Object</b>	press Return

### 16.3.2 Submitting an Ingest Request (descoped)

The Science Data Provider can access the network ingest subsystem through **Netscape**. The following procedure describes the automated network ingest of data to ECS from data providers which will be accomplished without direct operator action. This procedure assumes that the DAN has already been created, which describes the location of the available data. The **Interactive Ingest Main Form** displays three options to the data provider; **Create DAN File**, **Submit Ingest Request**, and **Monitor On-Going Request Status**.

The following procedure will open the Interactive Ingest tool, then submit an ingest request. The Data Provider selects the files to be ingested from a list displayed on the **Submit Ingest Request** screen. If you are already familiar with the procedures, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure.

- 1 Click on the **Netscape Navigator** icon.
- 2 Enter the **URL** of the **Ingest Home Page**, then press **Return**.
  - The Data Provider login page is displayed.
- 3 Enter the **Data Provider** name in the **ECS Data Provider** field, then press **Return**.
  - The cursor moves to the Data Provider Password field.
- 4 Enter the **Data Provider Password**, in the **ECS Data Provider Password** field, then press **Return**.
- 5 Click on the **Submit Ingest Request** radio button.

- 6 Click on the **Submit** push button.
  - The **Submit Ingest Request** screen is displayed.
  - A list of data files are displayed.
- 7 Click on the **Data File** to be ingested.
  - The data file number appears to the right of **Select Requests (s)**
  - More than one file can be selected at one time.
- 8 Click on the **Submit** push button.
  - The Ingest Request has been submitted.
- 9 Exit the **Interactive Ingest** system by following menu path **File → Quit**.

**Table 16.3-3. Submitting an Ingest Request - Quick-Step Procedure**

Step	What to Enter or Select	Action to Take
1	<b>Netscape Navigator</b> icon	single Click
2	Enter the <b>URL</b> of the <b>Ingest Home Page</b>	press Return
3	Enter <b>Data Provider</b>	press Return
4	<b>Enter Data Provider Password</b>	press Return
5	<b>Submit Ingest Request</b> radio button	single Click
6	<b>Submit</b> push button	single Click
7	<b>Data File</b>	single Click
8	<b>Submit</b> push button	single Click
9	<b>File → Quit</b>	single Click and drag

### 16.3.3 Monitoring On-Going Request Status (descoped)

The on-going status of submitted data requests can be viewed by invoking the **Interactive Ingest Main Form**, then entering the **Data Providers** name and selecting the **Monitor On-Going Request Status** radio button. The **Ingest Request On-Going Status** screen displays all the active requests for the **Data Provider**. The **Ingest Request On-Going Status** screen displays each data request, its **Request ID** number and the acceptance or rejection of the data request. To display more details on a specific data request click on the individual data request, which opens the **On-Going Status Monitor** screen. From the **On-Going Status Monitor** screen click on the data request to display the Granule Level status.

The following procedure will open the **Interactive Ingest Tool**, then view the status of a data request at the granule level. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure. If the **Interactive Ingest Main Form** has already been opened, skip steps 1 through 7, otherwise begin with step 1.

- 1 Click on the **Netscape Navigator** icon.

- 2 Enter the **URL** of the Ingest Home Page, then press **Return**
- 3 Enter the user **Password**, then press **Return**.
- 4 Enter the **Data Provider** name, then press **Return**.
- 5 Click on the **Monitor On-Going Request Status** radio button.
- 6 Click on the **Submit** push button.
  - The **Ingest Request On-Going Status** screen is displayed.
  - The following information is displayed for all active requests;
    - a. Data request file number
    - b. Acceptance or rejection of each request.
    - c. System Request Id number.
- 7 Click on a **Individual Ingest Request**.
  - The **On-Going Status Monitor** screen is opened, which displays:
  - The **Request ID**.
  - **State** of request .
  - **% Complete**
  - **Priority**
  - **Start Time**
  - **End Time**
- 8 Click on the **Request ID**.
  - The **Granule Level Status Monitor** screen for the selected Request ID is opened, displaying the following information:
    - The **Request ID** number.
    - The **Status**.
    - The **Percent Complete**.
    - The **Data Provider**.
    - The **Ingest Type**.
    - The **Priority**.
    - The **Process Start Time**.
    - The **Expiration Time**.
    - The **Granule Count**.
    - The **Data Volume**.
    - The **Data Type**.
    - The **Granule Volume**.
    - The **Granule State**.
- 9 Exit the **Interactive Ingest** system by following menu path **File** → **Quit**.

**Table 16.3-4. Monitoring On-Going Request Status - Quick-Step Procedures**

<b>Step</b>	<b>What to Enter or Select</b>	<b>Action to Take</b>
1	<b>Netscape Navigator</b> icon	<b>single Click</b>
2	Enter the <b>URL</b> of the Ingest Home Page	<b>press Return</b>
3	Enter <b>Password</b>	<b>press Return</b>
4	Enter the <b>Data Provider</b>	<b>press Return</b>
5	<b>Monitor On-Going Request Status</b> radio button	<b>single Click</b>
6	<b>Submit</b> push button	<b>single Click</b>
7	<b>Individual ingest Request</b>	<b>single Click</b>
8	<b>Request ID</b>	<b>single Click</b>
9	<b>File → Quit</b>	<b>single Click and drag</b>

## 16.4 Ingest Polling Process

The **ECS Ingest Subsystem** supports a transfer mechanism to acquire data from a supplier system (Data Provider). This process is called Polling. There are two Polling processes supported, **Polling Ingest with Product Delivery Record** (Section 16.4.1), and **Polling Ingest without Product Delivery Record** (Section 16.4.2). **Ingest Information Notifications** that are received from, and sent to the Data Provider, or any pre-defined e-mail address, during this process will be addressed in Section 16.4.3. Ingest Archive Verification is discussed in Section 16.4.4.

The Activity Checklist table that follows provides an overview of the **Ingest polling Subsystem** process. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) list the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

**Table 16.4-1. Ingest Polling - Activity Checklist**

<b>Order</b>	<b>Role</b>	<b>Task</b>	<b>Section</b>
1	DIT	Polling Ingest With Product Delivery Record (PDR)	(I) 16.4.1
2	DIT	Polling Ingest Without (PDR)	(I) 16.4.2
3	DIT	Ingest Information Notifications	(P)16.4.3
4	DIT	Ingest Archive Verification	(P)16.4.4
5	DIT	Deleting Files from the Ingest Polling Directory	(P)16.4.5

### 16.4.1 Polling Ingest With Product Delivery Record

**ECS** periodically checks on an agreed-upon network location for a **Product Delivery Record (PDR)** file. The **PDR** file contains information identical to that in a **DAN**, see (Section 16.3.1). The Data Provider may have previously transferred the data to a working storage device within

ECS, otherwise an ftp “get” will be used to obtain the data from the Data Provider within a specified time window. The Data Provider and the ECS Ingest Subsystem are each equipped with a computer program that invokes an FTP daemon, which automatically polls the server supplying the data.

A periodic polling process detects and then acquires a **PDR**. The Ingest subsystem then validates the information contained in the **PDR**. If the system fails to validate the PDR or if validation of the PDR failed, a Product Delivery Record Discrepancy (PDRD) is sent to the Data Provider via ftp or email. . If the Ingest Subsystem is able to read the **PDR**, a request ID is assigned and the **PDR**, and its contents are placed in the **Event Log**. A **DAA** is sent to the Data Provider indicating readiness to ingest the data identified in the **PDR**. Ingest generates a corresponding ingest request and stores the request on a prioritized list. The Ingest function ensures that all required devices are allocated and schedules and performs the data transfer. After ECS has attempted to ingest and archive data, a Product Acceptance Notice (PAN) is automatically sent via email or ftp to the data provider. The Pan file announces the completion of data transfer and archive. The PAN file also identifies any error or problems that may have been encountered during the ingest process.

The DIT may monitor the status of any ingest request by using the **Monitor/Control** screen of the **ECS Ingest Tool** (Section 16.2.4). The Ingest process is automated, however there are several sequences in which errors can be encountered which will cause the process to stop, requiring Operator intervention (see Section 16.4.4). The Event log will be updated during each phase of the Ingest process, therefore the DIT can easily access the status of any request. If intervention is required, the Computer Operator and/or DIT can Suspend, Cancel or Resume the Ingest process by using the **Operator Tools** of the **ECS Ingest** subsystem (Section 16.2.5).

## **16.4.2 Polling Ingest Without Product Delivery Record**

This mechanism is planned to be used for the transfer of certain ancillary products required for data processing. The ingest subsystem periodically polls an agreed-upon network location for the presence of data (no PDR is needed in polling W/O PDR). All data at the specified location are assumed to make up a collection of ingest data with one file per data granule. Note: Only the actual data will be placed in the specified location for polling W/O PDR. The ingest function automatically performs an ftp get from the Data Provider within a system tunable time interval . The data goes through the usual ingest verification process of format conversion and metadata extraction and validation, with status messages going to the event log. When the ingest process has been completed, a message is sent to the **History Log** (Section 16.2.3), the polling interval is reset, and the system enters a wait state.

## **16.4.3 Ingest Information Notifications**

### **16.4.3.1 Polling With Delivery Record**

During the Ingest process several Information Notices are sent to the Data Provider, the Ingest subsystem, and the event log. The first notice is from the Data Provider, informing the ingest subsystem that data is ready for transfer. This notice is called a **Data Availability Notice**

(**DAN**) or **Product Delivery Record (PDR)**. PDR h contains the information, such as data source, number of files, and location of data.

### 16.4.3.2 Auto Ingest Interface

In some cases an Auto Ingest is accomplished., for example LPS to Land Sat 7 GW. When the subsystem receives the **DAN** or **PDR** it sends a message back to the Data Provider to acknowledge the receipt of the **DAN** or **PDR**. The return message is called a **Data Availability Acknowledgment (DAA)**. The Ingest system automatically logs all of the messages into the event log, therefore the DIT can obtain the current status of an ingest request at any time. If an error occurs during the ingest process another **DAA** is sent to the Data Provider and to the event log explaining the problem. When the ingest process has been completed, the system generates a **DATA Delivery Notice (DDN)**, which is sent to the Data Provider. The Data Provider then returns a **Data Delivery Acknowledgment (DDA)** in response to the **DDN** and terminates the session. Ingest provides a status message to the **Ingest History Log** when the transaction is complete.

The following section describes the steps needed to view the information contained in the notices for a specific Data Provider. The DIT can view the contents of any notice through the **ECS Ingest tool**. If you are familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the detailed procedure that follows.

- 1 Click on the **ECS Ingest** icon. This assumes that the Ingest GUI is running, if the GUI is not up, then follow the steps for bringing up the Ingest GUI outlined in section 16.2.1.
  - The **ECS Ingest** tool is now open.
  - The **Ingest Introduction** screen is displayed.
- 2 Click on the **Monitor/Control** tab widget.
  - The **Monitor/Control** screen is displayed.
- 3 Click on the **Data Provider** button, in the radio box.
  - The cursor moves to the periodic box to the right of the Data Provider.
- 4 Enter the **Data Provider**, then press **Return**.
- 5 Click on the **Text view** button.
- 6 Click on the **OK** push button.
  - All ongoing ingest requests for the Data Provider are displayed, including the Informational Notices.
- 7 Highlight an individual request, then **double Click**.
  - Text is displayed at a granule level.

- 8 Exit the **ECS Ingest** tool by following menu path **File** → **Exit**.

**Table 16.4-2. Ingest Information Notification - Quick-Step Procedures**

Step	What to Enter or Select	Action to Take
1	<b>ECS Ingest</b> icon	<b>single Click</b>
2	<b>Monitor/Control</b> tab widget	<b>single Click</b>
3	<b>Data Provider</b> radio button	<b>single Click</b>
4	Enter the <b>Data Provider</b>	<b>press Return</b>
5	<b>Text view</b> button	<b>single Click</b>
6	<b>OK</b> push button	<b>single Click</b>
7	<b>Highlight</b> individual request	<b>double Click</b>
8	Follow menu path	<b>File</b> → <b>Exit</b>

#### 16.4.4 Ingest Archive Verification

In an effort to verify that the data ingested has been archived successfully, the following steps are used to verify whether data is present on the archive. This procedure makes it unnecessary to get into any archive software. This procedure is pretty straight forward and safe so don't worry about doing anything strange and wonderful to the system. Good luck. The aster, ceres, data, I7, and modis directories correspond directly to tape volumes in the system. The data is listed in the Amass data base and is actually on tape.

- 1 Log on to any workstation.
- 2 Type in your **login** and **password**.
- 3 Enter **telnet <hostname>**. Example **telnet g0drg01**.
- 4 Set your terminal display environment using the command:  
**setenv DISPLAY <hostname:0.0>**
- 5 Type in your **login** and **password**.
- 6 Change directory to the directory containing the location of the archive data:  
**cd /dss\_stk1**
- 7 Enter **ls** to list the contents of the directory.
  - Should see OPS, TS1, TS2, and test mode directories

- 8 Change directory to the directory containing the mode used:  
**cd [ OPS, TS1, TS2, test]**
- 9 Enter **ls** to list the contents of the directory.
  - Should see aster, ceres, data, 17, and modis directories
- 10 Change directory to the directory containing the location of the type of data ingested:  
**cd [ aster, ceres, data, 17, and modis]**
- 11 Enter **ls** to list the contents of the directory.
  - Should see data listed on tape in the archive.

**Table 16.4-3. Ingest Archive Verification - Quick-Step Procedures**

Step	What to Enter or Select	Action to Take
1	Telnet <hostname>	press Return
2	UserId	press Return
3	Password	press Return
4	setenv DISPLAY <hostname:0.0>	press Return
5	cd /dss_stk1	press Return
6	cd [ OPS, TS1, TS2, test]	press Return
7	cd [ aster, ceres, data, 17, and modis]	press Return
8	ls	press Return

### 16.4.5 Deleting Files from the Ingest Polling Directory

The Ingest Polling Directory performs cleaned-up operations after a successful archive. At the present time this process is being done manually. The EcInPollClean script was delivered in Drop4PX to manually clean the EDOS polling directory, which is where the problem was first identified. The EcInPollClean script will clean all files in the specified directory (to include all files in subdirectories, if any) that are older than 48 hours. The script requires two inputs, the name of the path containing the files to be deleted, and the number of hours. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of the procedure. If you are new to the system, you should use the following detailed procedures:

- 1 Log in to any workstation using your user identifier and password by typing **YourUserID**, and then press **Return**.
  - A password prompt is displayed.

- 2 Enter *YourPassword*, then press **Return**.
  - You are authenticated as yourself.
- 3 Enter **telnet <hostname>**. Example **telnet g0drg01**.
- 4 Enter *YourUserID*, and then press **Return**.
  - A password prompt is displayed.
- 5 Enter *YourPassword*, then press **Return**.
  - You are authenticated as yourself.
- 6 Set your terminal display environment using the following command:  
**setenv DISPLAY <hostname:0.0>**
- 7 Change directory to the directory containing the Ingest EcInPollClean script file:  
**cd /usr/ecs/<mode>/CUSTOM/utilities**
- 8 Enter **ls** to list the contents of the directory:
- 9 Execute the EcInPollClean script using the following command:  
**EcInPollClean <path name> <number of day>**

**Table 16.4-4. Deleting Files From the Ingest Polling Directory - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	YourUserID	press Return
2	YourPassword	press Return
3	telnet <hostname>	press Return
4	YourUserID	press Return
5	YourPassword	press Return
6	setenv DISPLAY <hostname:0.0>	press Return
7	cd /usr/ecs/<mode>/CUSTOM/utilities	press Return
8	Ls	press Return
9	EcInPollClean <path name> <number of day>	press Return

## 16.5 Recovery from a Data Ingest Failure

When an ingest fault (error) occurs, there may be a requirement for action to recover from the error. Recovery actions may be made necessary by invalid DAN contents or other errors that result in data ingest failure. When a fault (error) occurs, the following actions occur:

- The processing of the ingest request stops.

- A message is sent to the Ingest/Distribution Technician and the data provider with a brief description of the problem.

The Ingest/Distribution Technician may use the Ingest GUI Monitor/Control screen, the Ingest History Log (refer to the section on Ingest Status Monitoring) and/or the following log files (in the /usr/ecs/*mode*/CUSTOM/logs directory on the ingest host machine) to review the failure event:

- EcInReqMgr.ALOG (ingest request manager log).
- EcInAuto.ALOG (automated ingest log).
- EcInPolling.ALOG (polling ingest log).
- EcInGran.ALOG (granule server log).
- EcInGUI.ALOG (Ingest GUI log).

In addition, it is possible to check the ECS Event Log (for events related to ingest failure) using the ECS Event Log Browser tab on the Management Data Access (MDA) GUI.

This section contains some examples of faults that are likely to occur, describes the notifications provided, and proposes operator actions in response to each fault situation. The specific recovery actions may vary due to operator preference or local DAAC policy.

The Activity Checklist table that follows provides an overview of the Recovery from a Data Ingest failure process. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) list the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (**P**) section number or Instruction (**I**) section number where details for performing the task can be found.

**Table 16.5-1. Recovery from a Data Ingest Failure - Activity Checklist**

Order	Role	Task	Section
1	DIT	Troubleshooting a Data Ingest Failure	(P)16.5.1
2	DIT	Recovering from a Faulty DAN	(P)16.5.2
3	DIT	Recovering from Exceeding the Volume Threshold	(P)16.5.3
4	DIT	Recovering from Exceeding the Maximum Number of Concurrent Requests	(P)16.5.4
5	DIT	Recovering from Insufficient Disk Space	(I) 16.5.5
6	DIT	Recovering from Exceeding the Expiration Date/Time Period	(P)16.5.6
7	DIT	Recovering from File Transfer (ftp) Error	(P)16.5.7
8	DIT	Recovering from Processing Errors	(P)16.5.8

### 16.5.1 Troubleshooting a Data Ingest Failure

When troubleshooting a data ingest failure, use the procedure that follows. The procedure starts with the assumption that all applicable servers and the Ingest GUI are currently running and the **Monitor/Control (All Requests)** screen is being displayed.

Upon receipt of the operator alert, use the **Monitor/Control** screen scroll bars as necessary to identify the faulty ingest request.

- When there is a data ingest failure, the system provides the following three responses:
  - Logs the error.
  - Alerts the Ingest/Distribution Technician.
  - Returns a DDN to the data provider indicating the nature of the failure.

Review the information concerning the faulty ingest request.

If additional information is needed, open and read the appropriate log file in the */usr/ecs/mode/CUSTOM/logs* directory on the ingest host machine.

- **EcInReqMgr.ALOG** (ingest request manager log).
- **EcInAuto.ALOG** (automated ingest log).
- **EcInPolling.ALOG** (polling ingest log).
- **EcInGran.ALOG** (granule server log).
- **EcInGUIL.ALOG** (Ingest GUI log).

Perform the appropriate recovery procedure depending on the nature of the problem:

- **Recovering from a Faulty DAN.**
- **Recovering from Exceeding the Volume Threshold.**
- **Recovering from Exceeding the Maximum Number of Concurrent Requests.**
- **Recovering from Insufficient Disk Space.**
- **Recovering from Exceeding the Expiration Date/Time Period.**
- **Recovering from File Transfer (ftp) Error.**
- **Recovering from Processing Errors.**

### 16.5.2 Recovering from a Faulty DAN

If the DAN/PDR is invalid, the data provider must submit a new DAN. The DIT should respond to the error by contacting the data provider to give an alert that the ingest failure has occurred, provide as much information as possible about why the failure occurred, and determine whether the data ingest request will be re-initiated. When working to recover from an invalid DAN/PDR, use the procedure that follows. The procedure starts with the following assumption that the Ingest GUI **Monitor/Control (All Requests)** screen is being displayed.

- 1 Upon receipt of the operator alert, use the **Monitor/Control** screen scroll bars as necessary to identify the faulty ingest request.
- 2 Review the information concerning the faulty ingest request.
- 3 If additional information is needed, open and read the appropriate log file in the */usr/ecs/mode/CUSTOM/logs* directory on the ingest host machine.
- 4 Contact (by telephone or e-mail) the data provider to discuss the following issues:
  - Report the ingest failure.
  - Discuss what has been discovered from reviewing the failure event data.
  - Determine whether the data provider will re-initiate the data ingest request with a new DAN.

- 5 If the data ingest request is to be re-initiated, monitor the subsequent ingest as described in the procedure for **Monitoring Ingest Requests**.

### 16.5.3 Recovering from Exceeding the Volume Threshold

Data Ingest may fail for reasons other than invalid DAN/PDR contents. For example, if the specified system volume threshold has been exceeded, the system sends a DDN to the Data Provider indicating that the system is full and an attempt should be retried again later. If a data provider's volume threshold has been exceeded, use the procedure that follows. The procedure starts with the following assumption that the Ingest GUI **Monitor/Control (All Requests)** screen is being displayed.

- 1 Upon receipt of the operator alert, use the **Monitor/Control** screen scroll bars as necessary to identify the faulty ingest request.
- 2 Review the information concerning the faulty ingest request.
- 3 If additional information is needed, open and read the appropriate log file in the `/usr/ecs/mode/CUSTOM/logs` directory on the ingest host machine.
- 4 If it is decided to increase the system volume threshold, first click on the **Operator Tools** tab.
  - The **Operator Tools** screen is displayed.
- 5 Click on the **Modify System Parameters** tab.
  - The **Modify System Parameters** screen is displayed.
- 6 Click in the **New:** field corresponding to **Volume Threshold**, then type the numerical value for the new volume threshold.
  - The *current* value of the volume threshold is printed on the corresponding line for reference purposes.
- 7 Click on the **OK** button at the bottom of the **Operator Tools: Modify System Parameters** tab to save the changes to system parameters.
  - The changes are invoked.
- 8 Click on the **Monitor/Control** tab.
  - The **Monitor/Control** screen is displayed.
- 9 Click on the **All Requests** button.
  - Alternatively, either a particular **Data Provider** or **Request ID** may be specified as described in the procedure for **Monitoring Ingest Requests**.
- 10 Click on the **Text View** button.

- 11 If the data ingest request is to be re-initiated, monitor the subsequent ingest as described in the procedure for **Monitoring Ingest Requests**.

#### 16.5.4 Recovering from Exceeding the Maximum Number of Concurrent Requests

If the specified system request threshold has been exceeded, the system sends a DDN to the Data Provider indicating that the system is full and an attempt should be retried again later. If a data provider's request threshold has been exceeded, use the procedure that follows to increase the system request threshold. The procedure starts with the following assumptions that the Ingest GUI **Monitor/Control (All Requests)** screen is being displayed.

- 1 Upon receipt of the operator alert, use the **Monitor/Control** screen scroll bars as necessary to identify the faulty ingest request.
- 2 Review the information concerning the faulty ingest request.
- 3 If additional information is needed, open and read the appropriate log file in the `/usr/ecs/mode/CUSTOM/logs` directory on the ingest host machine.
- 4
- 5 If it is decided to increase the system request threshold, first click on the **Operator Tools** tab.
  - The **Operator Tools** screen is displayed.
- 5 Click on the **Modify System Parameters** tab.
  - The **Modify System Parameters** screen is displayed.
- 6 Click in the **New:** field corresponding to **Request Threshold**, then type the numerical value for the new volume threshold.
  - The *current* value of the request threshold is printed on the corresponding line for reference purposes.
- 7 Click on the **OK** button at the bottom of the **Operator Tools: Modify System Parameters** tab to save the changes to system parameters.
  - The changes are invoked.
- 8 Click on the **Monitor/Control** tab.
  - The **Monitor/Control** screen is displayed.
- 9 Click on the **All Requests** button.
  - Alternatively, either a particular **Data Provider** or **Request ID** may be specified as described in the procedure for **Monitoring Ingest Requests**.
- 10 Click on the **Text View** button.
- 11 If the data ingest request is to be re-initiated, monitor the subsequent ingest as described in the procedure for **Monitoring Ingest Requests**.

### 16.5.5 Recovering from Insufficient Disk Space

After the receipt of the DAN, a disk space allocation is requested from the Data Server, and a time-out timer for the disk allocation is set. In the event that the Data Server has insufficient disk space, the time-out timer will expire. The Ingest Subsystem notifies the operator that the ingest request is waiting for Data Server disk allocation. At present the Ingest/Distribution Technician has no real option for responding to the problem except perhaps to discuss the situation with the system administrator.

### 16.5.6 Recovering from Exceeding the Expiration Date/Time Period

If data are unavailable but the time period during which that data were to have been made available has expired, the error is logged in the event log, and a DDN is sent to the Data Provider indicating expiration date/time exceeded. The Ingest/Distribution Technician receives an alert on his/her screen, then contacts the data provider to resolve the problem. If a data provider's expiration date/time period has been exceeded, use the procedure that follows. The procedure starts with the assumption that the Ingest GUI **Monitor/Control (All Requests)** screen is being displayed.

- 1 Upon receipt of the operator alert, use the **Monitor/Control** screen scroll bars as necessary to identify the faulty ingest request.

Review the information concerning the faulty ingest request.

- 2 If additional information is needed, open and read the appropriate log file in the **/usr/ecs/mode/CUSTOM/logs** directory on the ingest host machine.
- 3 Contact (by telephone or e-mail) the data provider to discuss the following issues:
  - Report the ingest failure.
  - Discuss what has been discovered from reviewing the failure event data.
  - Determine whether the data provider will re-initiate the data ingest request.

If the data ingest request is to be re-initiated, monitor the subsequent ingest as described in the procedure for **Monitoring Ingest Requests**.

### 16.5.7 Recovering from File Transfer (ftp) Error

After numerous unsuccessful data transfer retries, an error is logged into the event log, the Ingest/Distribution Technician is notified and a DDN is sent to the Data Provider indicating ftp failure. The Ingest/Distribution Technician reviews all current ingest requests using the **Operator Tool** of the **ECS Ingest** GUI to determine whether other communication-related failures have occurred and may consult with the data provider(s) to resolve the problem. If it is necessary to recover from a file transfer error, use the procedure that follows. The procedure starts with the assumption that the Ingest GUI **Monitor/Control (All Requests)** screen is being displayed.

- 1 Upon receipt of the operator alert, use the **Monitor/Control** screen scroll bars as necessary to identify the faulty ingest request.

- 2 Review the information concerning the faulty ingest request.
- 3 If additional information is needed, open and read the appropriate log file in the `/usr/ecs/mode/CUSTOM/logs` directory on the ingest host machine.
- 4 Click on the Ingest GUI **Operator Tools** tab.
  - The **Operator Tools** screen is displayed.
- 5 Click on the **Modify System Parameters** tab.
  - The **Modify System Parameters** screen is displayed.
- 6 Review the current value for **Communication Retry Count**.
- 7 If it is decided to increase the communication retry count, follow the procedure for **Modifying System Parameters**.
- 8 If the data ingest request is to be re-initiated, monitor the subsequent ingest as described in the procedure for **Monitoring Ingest Requests**.

#### 16.5.8 Recovering from Processing Errors

Ingest processing errors may require Ingest/Distribution Technician intervention. The following problems are examples of processing errors.

- **Missing Required Metadata.**
- **Unknown Data Type.**
- **Template Out of Synchronization (Sync).**
- **Unavailable File Type.**
- **Metadata Validation Error.**
- **Missing Optional Data Files.**

If it is necessary to recover from a processing error, use the procedure that follows. The procedure starts with the assumption that the Ingest GUI **Monitor/Control (All Requests)** screen is being displayed.

- 1 Upon receipt of the operator alert, use the **Monitor/Control** screen scroll bars as necessary to identify the faulty ingest request.
- 2 Review the information concerning the faulty ingest request.
- 3 If additional information is needed, open and read the appropriate log file in the `/usr/ecs/mode/CUSTOM/logs` directory on the ingest host machine.
- 4 If the processing error involves missing required metadata or an unknown data type, contact (by telephone or e-mail) the data provider to request the data provider to make the necessary corrections and re-initiate ingest.

- 5 If the processing error involves an out-of-sync template or an unavailable file type, submit a trouble ticket in accordance with the trouble ticketing procedures.
- 6 If the processing error involves a metadata validation error or missing optional data files and if the processing template instructions indicate to continue inserting the data, contact (by telephone or e-mail) the data provider to provide notification that the data have been flagged as bad.
  - If the processing template instructions indicate to continue inserting the data, the following events occur:
    - The error is logged in the event log,
    - The data are flagged as bad.
    - A preprocessing failure alert for each data granule appears on the Ingest/Distribution Technician's screen.
    - A Metadata Problem Report is generated.
- 7 If the processing error involves a metadata validation error or missing optional data files and if the processing template instructions require the rejection of the data, contact (by telephone or e-mail) the data provider to request the data provider to make the necessary corrections and re-initiate ingest.
  - If the template instructions require the rejection of the data, the normal notices and alerts are sent, including a DDN to the external data provider indicating the preprocessing failure.
- 8 If the data ingest request is to be re-initiated, monitor the subsequent ingest as described in the procedure for **Monitoring Ingest Requests**.

## 16.6 Document Ingest

The Ingest subsystem will not include any capabilities for document ingest in B.0. All ingest will be done manually by operators via ftp pull. Operators are notified of the need to pull a document by phone or e-mail.

The ingest format will remain as originally planned, i.e., it will follow the established document ingest formats. That is, the document submitter must prepare a set of document files in one of the approved ECS formats, an accompanying valid metadata file, and a valid DAN.

The document data server (DDSRV) host will include a directory to keep B.0 ingest requests. The directory name is **TBS**. By operational procedures, operators are expected to create a subdirectory in that directory for each ingest and deposit the files as ingested into that subdirectory. The purpose of the subdirectory is to retain ingested material for subsequent "real" ingest into ECS once the DDSRV and the document ingest functions are implemented. The naming conventions for these subdirectories are **TBS**.

The documents will be placed by operational procedure into directories on the DDSRV Netscape Server host. The directory names must be in compliance with B.0 directory naming conventions, but are otherwise at the discretion of DAAC Ops. DAAC Ops will be responsible for creating

web pages on the DDSRV Netscape host which point to these documents, and provide links to these web pages from relevant other ECS web pages.

### **16.6.1 Document Inserts From Within ECS**

Documents generated automatically within ECS will be associated with fixed pathnames on the DDSRV host (if the DDSRV will store always only one occurrence of the document), or fixed directories on the DDSRV host (if there will be multiple instances of the document kept on the DDSRV).

Documents which are planned for insertion into the DDSRV from within ECS (e.g., algorithm documentation) by manual procedure, will have their procedure changed to provide ingest documentation, generate a DAN, have the document placed into an "archive" directory, and then have the document placed into a DDSRV directory.

The providers of documents generated automatically by ECS or inserted manually, are responsible for having web pages produced and stored on the DDSRV Netscape server host pointing to the documents. The web pages must be compliant with the ECS HTML guidelines. DAAC operations are free to add links to them in other ECS web pages.

DAAC Ops will maintain and update any web pages needed to support access to the documents on the B.0 DDSRV web server. The web pages are placed into directories named in accordance with the Release B.0 directory naming conventions, but the names are otherwise at the discretion of DAAC Ops

There is no guarantee that the B.0 URLs for DDSRV documents will be valid for these documents in B.1.

If documents are updated, the updated versions need to go through the manual ingest procedure to ensure that they can be ingested into B.1.

DDSRV is responsible for any configuration tailoring of the DDSRV Netscape Server.

SSI&T will need to produce and save a DAN for the documents which are part of a DAP/SSAP.

### **16.6.2 Scanning Documents**

This procedure will take you step by step in operating the **HP Jetscan Scanner** to create a temporary file for data to be downloaded to the system for archiving documents. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure;

- 1** Click on the **Start** button.
- 2** Select **Programs**.

- 3 Select **TexBridge Pro 96** to access the TexBridge software for scanning documents consisting of both text and tables.
  - Select **TexBridge Pro 96** once again within the second column.
  - When the **TexBridge Pro 96** screen appears insure that the following 5 options are listed as follows.

**Page Quality / Page Orientation / Original Document Layout / Document Recomposition / Brightness**



- 4 Select **Save Image Defer OCR** this is the 8<sup>th</sup> icon to far right of the screen.
- 5 Load documents into HP ScanJet feeder.
- 6 Click **Go** this will start the scanning process.
- 7 When the document has been scanned, save the document with a valid file name.

This process will require a filename to be created “**when saving**” the data before the data information can be accessed in the system for verification.

**Table 16.6-1. Scanning Documents - Quick-Step Procedures**

Step	What to Enter or Select	Action to Take
1	Select <b>Start</b> from the Windows 95 menu bar	<b>single Click</b>
2	Select <b>Programs</b>	<b>single Click</b>
3	Select <b>TexBridge Pro 96</b>	<b>single Click</b>
4	If scanning both text and table select <b>Save Image Defer OCR</b>	<b>single Click</b>
5	Load documents into <b>HP ScanJet feeder</b>	
6	<b>Click Go</b>	<b>single Click</b>

### 16.6.3 Accessing Scanned Documents

After a document has been scanned, it should be checked to ensure that it has been properly scanned and saved. The procedure for accessing scanned documents starts with the assumption that the Ingest/Distribution Technician has logged in to Windows 95 on the applicable personal computer (PC). Upon completion of the above procedure follow the step to access the scanned files you’ve just created.

- 1 Select **Start** from the Windows 95 menu bar.

- 2 Select **Programs**
- 3 Select **Windows Explorer** from the file menu.
- 4 Click **Program files** under this option
- 5 Select **TexBridge Pro 96**
- 6 Click folder called **Tiffs**
- 7 Select the filename/s you created from the documents you've just scanned.

**Table 16.6-2. Opening Tiffs File - Quick-Step Procedures**

<b>Step</b>	<b>What to Enter or Select</b>	<b>Action to Take</b>
1	Select <b>Start</b> from the Windows 95 menu bar	<b>single Click</b>
2	Select <b>Programs</b>	<b>single Click</b>
3	Select <b>Windows Explorer</b>	<b>single Click</b>
4	Select <b>Program Files</b>	<b>single Click</b>
5	Select <b>TexBridge Pro 96</b>	<b>single Click</b>
6	<b>Click Tiffs file</b>	<b>single Click</b>
7	Select the file you created	<b>single Click</b>

# 17. Archive Management

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The Storage Management software component of the Data Server Subsystem (DSS) provides management services for storing and accessing File Storage Management System (FSMS) data files held in FSMS. The storing of the data is the main focus of the FSMS described in this section. This storage capability is implemented by both custom and commercial off the shelf (COTS) file storage management systems. The FSMS consists of the main storage and a browse facility. This system utilizes two types of archive robotic units, Storage Technology (STK) 9310 Powderhorn Library Storage Module (LSM) and an EMASS Automated Media Library (AML). A grouping of STK storage silos combine to form the main data tape storage facility. An EMASS AML/2 unit implements the browse functionality.

The main storage STK Powderhorns have a maximum capacity of 6000 cartridges each depending on the configuration of the silo. The cartridges have a capacity of 50 Gigabytes each non-compressed, and 100 Gigabytes if compressed. This gives each library an approximate capacity of 300 Terabytes of data. The dual arm robotic unit is capable of 300 to 400 cartridge exchanges per hour. The library utilizes STK Redwood SD3 helical scan tape drives. The main data storage facility houses Level 0-4 data, ancillary data, command history, algorithms, engineering data, calibration data, systems and applications software.

The EMASS browse unit utilizes 6 optical disk units for two media types. Currently, there are three 2.6 Gigabyte Hewlett Packard and three 9.4 Gigabyte drives. This archive is under configuration at this time. A single picker arm unit operates as a robot for both media types. The EMASS browse unit contains metadata reference data available in the main archive storage facility. It allows the user to search for one specific type, category, or grouping of data. By performing this function for the system, it allows the main storage facility to concentrate on the ingesting, storing, and distribution of the data products.

## 17.1 Custom Software Items

The following custom software items reside on the Storage Management Server:

1. EsDsStArchiveServer The Archive Server moves files in and out of the FSMS via the Archival Management and Storage System (AMASS) cache. It is the front end to the FSMS. The Archive Server has three services to perform on behalf of its clients:
  - Store: Move the listed files from staging disk to mass storage cache. AMASS moves the files from cache into the archive.
  - Retrieve: Request files from the archive when files are available.

- Delete: Request that references to the files be deleted from the AMASS database. A request includes a file list (1 to N) on which the service is performed. The request is handled as a transaction, the action will occur for all files in the list or not at all.
2. EsDsStStagingDiskServer The Staging Disk Server provides a full set of directory services against the physical storage. The server process manages all access to the staging disk. By maintaining allocation data with each use of the area. The directory services are:
    - list a file
    - allocate space for a file
    - extend an allocation
    - link files
    - copy in/out
    - delete
    - create subdirectory. Requests that cannot be handled immediately due to insufficient space are queued and then fetched from the queue for completion when the space is available.
  3. EsDsStStagingMonitorServer The Staging Monitor Server is a persistent server that moves files from FSMS and monitors the read only cache area. It also tracks the staging disk access counts.
  4. EcDsStFTPDisServer The FTP Distribution Server distributes files via ftp and file push into the appropriate servers.
  5. EcDsStPullMonitorServer The Pull Monitor Server constantly monitors the contents of the pull area. It also provides mechanisms to delete data objects from the pull area and report utilization of the pull area.
  6. EcDsStIngestFtpServer The Ingest FTP Server transfers files from external provider to staging disk. Request includes source host, source directory, source file, target host and target directory.
  7. EcDsStmgtGUI Provides access to the Storage Management GUIs.
  8. EcDsSt8MMServer EcDsSt4MMServer EcDsStD3Server EcDsStCDROMServer Controls reads and writes to the appropriate units.

## 17.2 COTS Software

The FSMS relies on software from both STK and EMASS for management of data files held in their mass storage systems. ECS reliance on COTS software is prevalent in the FSMS system. The FSMS utilizes three COTS software packages for control functions of archive management,

AMASS, GRAU Distributive AML Server (DAS), and STK Automated Cartridge System Library Software (ACSLs).

AMASS acts as the main control and interface to the FSMS. It serves as a UNIX file system that manages removable media jukeboxes. AMASS integrates with DAS to manage the EMASS robotics and with ACSLS to manage the STK robotics.

Each of the two robot control packages, ACSLS and DAS, are furnished by their respective hardware vendors, STK and EMASS, and are bundled with the hardware delivery. ACSLS runs on a SUN SPARC5 workstation and, in turn, relies on an ORACLE Database. The ORACLE database also resides on the SPARC5 and while the ACSLS is a tool which is not administered, ORACLE must be backed up periodically and may need to be restored or repaired. DAS is the ACSLS equivalent for the EMASS robotics and it resides on a built-in PC, on the EMASS AML.

Figure 17-2 depicts the software configuration of the FSMS subsystem.

STK Main Storage Facility	EMASS Browse Facility
DSS Software with Storage Management GUI	DSS Software with Storage Management GUI
AMASS Software	AMASS Software
ACSLs Software	DAS Software

**Figure 17-2. FSMS Software Configuration**

The Activity Checklist depicted in Table 17.2-1 provides an overview of the COTS Software section. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

**Table 17.2-1. COTS Software Activity Checklist**

Order	Role	Task	Section
1	DAM/DIT/SA	AMASS	(I) 17.2.1
2	DAM	Media Control	(I) 17.2.1.1
3	DAM/DIT	Data Integrity	(I) 17.2.1.2
4	DAM/DIT	Cache	(I) 17.2.1.3
5	DAM/DIT	AMASS On-line Database	(I) 17.2.1.4
6	DAM	Rebooting the AMASS Database	(P) 17.2.1.4.1
7	DAM/DIT	Off-Line Media Management	(I) 17.2.1.5
8	DAM/DIT	File Size Limitations	(I) 17.2.1.6
9	DAM/DIT	Distributive AML Server (DAS)	(I) 17.2.2
10	DAM/DIT	Automated Cartridge System Library Software (ACSLs)	(I) 17.2.3

### 17.2.1 AMASS

The FSMS utilization of robotic systems requires the implementation of a FSMS to control functions and data archiving. AMASS provides this function for ECS.

Since AMASS is implemented at the virtual file system (VFS) layer of the host operating system, it is transparent to other software programs. The VFS layer is designed for this approach and is the layer where other UNIX file systems attach, such as UFS, NUS, and RFS. Because AMASS is implemented at this level, you do not have to modify the host operating system.

The system call transparencies provided by this implementation allows the host computer running AMASS to be a server to an entire network of homogeneous or heterogeneous systems. The networking software runs without modification on top of AMASS so that the host can run whatever networking protocols are available, including NFS, RFS, TCP/IP, DECnet, or HYPER channel.

Because AMASS is implemented at the UNIX operating system level, it isolates the integration of the removable media drives and libraries from the specific applications that use it. In this case the application is DSS storage management (STMGT) software. Because AMASS supports applications by providing access to the files using standard file system semantics, programs that currently run on standard UNIX file Systems can use AMASS without modification.

The AMASS file system is designed to conform to all the standard UNIX data integrity functions and conventions. This conformity is beneficial when creating file systems with the potential size of an AMASS file system.

AMASS provides transparent access to the files stored in the AMASS file system. AMASS makes the drives and media (volumes) normally considered off-line storage appear as a single, online, logical device with a single, mounted, file system. Therefore, the extensive storage provided by a library appears as one large file system.

The AMASS file system is mounted as a single mount point in the host file system tree. With this single mount call, the entire AMASS file system capacity is brought online and made available for use. Although your clients may think their files are located on the AMASS server, in reality they may be stored on multiple libraries or even on off-line storage.

FSMS supports the transport of files from the UNIX server, Silicon Graphic Incorporated (SGI) Challenger Series CPU, where it is installed, onto robotic libraries and standalone drives. AMASS allows system administrators to manage libraries, drives, and volumes. These elements can be logically sub-divided into user-definable groups, if desired. To users, the files, no matter where they reside, appear as a single, mounted file system. AMASS treats each tape or optical disk as a volume.

Moving and mounting volumes are transparent to both the host and the client accessing data. Consequently, access to data stored in an AMASS system is identical to accessing data on a mounted, magnetic disk file system.

### **17.2.1.1 Media Control**

The Archive Manager enters either a bar code ID or a volume label ID when a new volume is introduced to AMASS with the *volnew* command. At the same time, AMASS also assigns this new volume a unique numerical ID. From then on, AMASS tracks the volume by this unique identifier and verifies the volume by using either bar codes or headers.

With AMASS, volumes from one or more libraries are allocated into groups, called volume groups. Then these volume groups are assigned to serve a particular subdirectory tree. Because these volume groups are assigned to directory subtrees, similar to mounting a file system, they are considered to be logical mount points. This allows the system administrator to assign volumes for specific purposes within AMASS without losing the benefits of a single file system and a single mount point that spans media.

The following types of volume groups are assigned; numerical group (#0 through 2047), space pool, and the cleaning group. After a volume group has been defined for a set of volumes, all writes to the volume group directory and its subdirectories go to the specified volumes. No other data is placed on these volumes. Therefore, when all the volumes are filled up, subsequent writes fail because the volume group is full. However, you can add volumes to the group as needed or allow the volume group to automatically grab more volume from a special volume group called the space pool. For more information on volume groups, refer to the *AMASS System Administrator's Guide*. The AMASS guide can be viewed using Adobe Acrobat and is available electronically on servers g0drg01 and g0drg02 in /usr/amass/books.

When a volume is full, AMASS automatically rolls to the next available volume to continue its operations. The volumes that make up AMASS are subdivided, into multiple groups (logical file systems or mount points) called volume groups.

In a library environment, there are many volumes but only a few drives. If several requests come in for many different volumes, the potential exists for AMASS to spend most of its time moving media and little of its time actually performing useful Input / Output (I/O). But because AMASS

simultaneously handles many random and simultaneous I/O requests, this design prevents thrashing (overworking the robot arm due to multiple requests) and optimizes I/O tasks. These items combine to minimize library operations and maximize the number of simultaneous operations that can be handled by the library.

Volume verification is extremely important in both standalone drives and libraries. Both types of devices are subject to operator error and automated systems can suffer from hardware malfunctions leading to incorrect volumes being loaded into the drives. AMASS supports multiple types of volume verification.

In libraries, media can be left in the drives if a system crash occurs. AMASS uses the volume bar codes or volume headers to identify the volumes and automatically put the volumes away.

### **17.2.1.2 Data Integrity**

AMASS provides data integrity in several ways. Write operations to files are allowed to complete to the cache, including sync, rsync, and synchronous I/O. AMASS tracks these operations and completes the I/O to the removable media in the event of a system crash. This tracking provides a level of data integrity consistent with standard UNIX file systems

### **17.2.1.3 Cache**

The AMASS cache resides on the magnetic disk of the UNIX server where AMASS is installed. The cache implementation follows all UNIX file system conventions for synchronous I/O, sync, and fsync functions. The caching of data provides the following benefits; greater system performance, protection against thrashing, facilitates the simultaneous access of library file system data by both multi-user and multi-tasking applications.

After files are in the cache, multiple file-writes to the same volumes are grouped into single large I/O operation that minimizes volume movement and maximizes I/O throughput. Therefore, a high aggregate throughput is achieved through the following items; grouping write operations in the cache, prioritizing reads-from volumes over writes-to-volumes.

The AMASS cache was designed to solve the disparity between the input of data streams from clients through the AMASS server and the output to a library. The data caching function of AMASS is used in conjunction with read-ahead and write-behind algorithms to optimize the I/O block sizes and the amount of data read and written after the media is positioned for I/O.

Because all operations completed to the cache are recovered in the event of a system crash, the write operations complete after a cache-write is done. Multiple cache partitioning allows the AMASS cache to be a maximum of 256 2-GB sized partitions. This large cache allows more data to remain resident in the cache for a longer period of time thereby increasing throughput and performance. In addition, a large cache allows large files to be cached faster before being moved to a secondary device. which increases throughput.

The cache size is configured to take advantage of both the application being used and the system environment where AMASS is installed. Because the cache size does not impact maximum file size, the cache can be very small. On the other hand, applications running database tables in the

library, may need a larger cache configuration to optimize the number of cache hits and allow updates to table headers to be predominantly cache I/O. The cache parameters are configured during installation. For information on sizing the cache, refer to AMASS document; *Installing and Configuring AMASS*.

#### 17.2.1.4 AMASS On-line Database

AMASS keeps a magnetic, disk-resident database of attributes called metadata pertaining to directories and files resident in its file system, (attributes consist of access time, user id, etc.). This database grows as files and directories are added to the AMASS file system.

The AMASS online database allows common file system utilities and system calls to operate very quickly, in many cases faster than even the host's native file system. Basic commands such as directory listings (`ls`), changing the working directory (`cd`), and even searching through part or all of the file system for files of given attributes, operate in AMASS without having to access the media in the library.

A secondary benefit of the online database is less media contention in the library when multiple users are accessing the AMASS file system. Because only the actual read- and write-data system calls need access to the library, more operations can be completed without waiting for media changes. This minimizes the number of media changes, greatly enhancing total I/O throughput capability.

Most UNIX file Systems require `fsck` (a file system integrity check) of all file systems mounted at the time of a system crash. This checking can be very time-consuming. The AMASS database, eliminates the need for this file system check associated with other file system designs. On system reboot, AMASS corrects the database based upon the journal files and brings the system back online. Typically, this function takes less than 30 seconds to complete.

#### Rebooting the AMASS Database

The AMASS file system may need to be rebooted during certain anomalous conditions. A few reasons to reboot AMASS could be if the system gets hung, if it is not communicating with ACSLS or DAS, or if one of the required daemons has aborted. To check the health of AMASS while it is still running, execute the **healthcheck** command. AMASS needs to have the following daemons running at all times:

```
libio_tape, amassmain, daemons/lm_ip -a fslock, qset
```

To verify they are running, simply search for the AMASS processes.

Ex. **ps -ef | grep amass**

In order to reboot AMASS you must have root privileges. The following procedure demonstrates the steps to reboot AMASS. Table 17.2-2 presents the steps required to follow the reboot process. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. Log in as **root** and enter the *password*.
2. Kill daemons by typing: **killdaemons**
3. If you want to test AMASS before restarting, go to step 4, otherwise, enter:  
**amass\_start**
4. To test the AMASS filesystem prior to starting AMASS type:  
**install\_tests**
  - Tests the operation jukebox operation and cache partitions, then restarts AMASS.

**Table 17.2-2. Rebooting the AMASS Database**

Step	What to Do	Action to Take
1	Log in as <b>root</b>	press <b>Return</b>
2	<b>killdaemons</b>	press <b>Return</b>
3	<b>amass_start</b>	press <b>Return</b>
4	<b>install_tests</b>	press <b>Return</b>

### 17.2.1.5 Off-line Media Management

Off-line media is supported through the online database. Because the file system's database is resident on the magnetic disk, all files and directories are always visible to clients and application programs. In robotic library environments, the online database allows media to be removed from the library without losing track of the files and directories resident on the media. Directory and file listing commands as well as all system calls, except read and write files, succeed on files even though media has been removed from the library. If a file's data is needed, AMASS uses the online database to quickly identify which of the off-line volumes must be reintroduced in order to access the data.

### 17.2.1.6 File Size Limitations

Within AMASS, file sizes are limited only by the host operating system's limitations. This means that files larger than the capacity of one volume can be stored in its file system (for example, a 2 GB-file can be stored on 5.25 inch optical disks that have a 300 MB-per side capacity). The file system and directory sizes of AMASS are virtually unlimited. Although every attempt is made to keep files of a directory on a single volume, both files and directories can span media boundaries. Therefore, file and directory sizes are not limited to media size. Consequently, a directory can reside on one or more volumes.

Even though files can reach 2 GB, regardless of the physical volume size to AMASS, the entire volume set appears as a single logical device of very large capacity. You can configure the file system to consist of any number of volumes (tapes or optical disks); the default is 65,000 volumes. On IRIX Versions 5.3 and 6.2 as well as Solaris 2.5, AMASS supports a 64-bit file system, which allows files greater than 2 GB.

### **17.2.2 Distributive AML Server (DAS)**

AMASS supports mixed media in EMASS Automated Media Libraries (AMLs), using the DAS software on the Archive Management Unit (AMU). During the AMASS installation, unique media types are configured as if they were in separate libraries.

DAS is a COTS product with both client and server components. The server component is installed on the AMU OS/2 server, and the client component is embedded in AMASS. For DAS installation and operation on the AMU, refer to the *DAS Installation and System Administration Guide*. The DAS guide can be viewed using Adobe Acrobat and is available electronically on servers g0acg01 and g0acg05 in /usr/amass/books.

DAS is designed to provide shared access to the family of AMASS Automated Mixed-Media Libraries. An unlimited number of heterogeneous networked clients can be configured within a DAS environment. DAS provides customers with the ability to optimize their automation strategies, throughout the enterprise, and leverage their AML acquisition decision. DAS provides the ability to share AMLs with many clients.

DAS is integrated with backup, tape management and/or hierarchical storage management (HSM) applications on the client to direct automated removable media activity through the DAS server to the library. A DAS client may be any system requiring AML services. A client may be granted complete or restricted access to AML resources. AML resources are defined as drives, volumes and insert/eject areas and may be marked as shared or private to each client. Through client registration, the administrator function in DAS is able to control client access and privileges.

The DAS server component runs within the AMU on the AML. The DAS server converts client requests into complete AMU requests. It also creates journal entries of all requests, for recovery purposes, and sends request status back to the client. DAS may be installed as a standalone AML connection or be configured to share an AML with MVS or other, EMASS supported, host attachments.

### **17.2.3 Automated Cartridge System Library Software (ACSL)**

Storage Tek's UNIX-based ACSL, allows applications based on the client systems access and manage information stored in an automated cartridge system (ACS). Client access appears as if the libraries were operating exclusively under the control of each client system. ACSL performs library command processing on the client's behalf, as well as processing operator commands issued by the library system administrator. Library requests and messages move across a network which is a client-independent control path that connects client systems and the operator's console with the ACS.

ACSL consists of a system administration component. The system administrator component provides an operator interface to control and monitor the ACS, including access control. A batch user interface allows automated scheduling of storage management functions, such as cartridge entry and eject, according to client processing requirements.

A programmatic interface allows client applications to direct specific library service requests to the ACSLS. These service requests include cartridge mounts, dismounts, enters, and ejects. Additional requests allow client applications to determine and change the status of cartridges and ACS components.

Basic library management facilities of ACSLS includes command and message processing, maintenance of the contents and configuration data base, Cartridge Access Port (CAP) management, event log recording, scratch-pool management and access control.

ACSLs facilitates data security with administrator-assigned volumes and limited command access.

The centralization of operations support reduced storage management requirements and facilitates lights-out data center management. The FSMS supports multiple media. Table 17.2-3 identifies the different types of archive media used within the FSMS system. Archive media consist of tape and optical disk cartridges. Each tape or disk cartridge is identified by means of a bar code label that shows the media number. This number provides the means to produce an archive catalog that tracks the location of each cartridge within the library. The catalog numbering is based on information provided to the robot arm mounted laser bar code reading scanners.

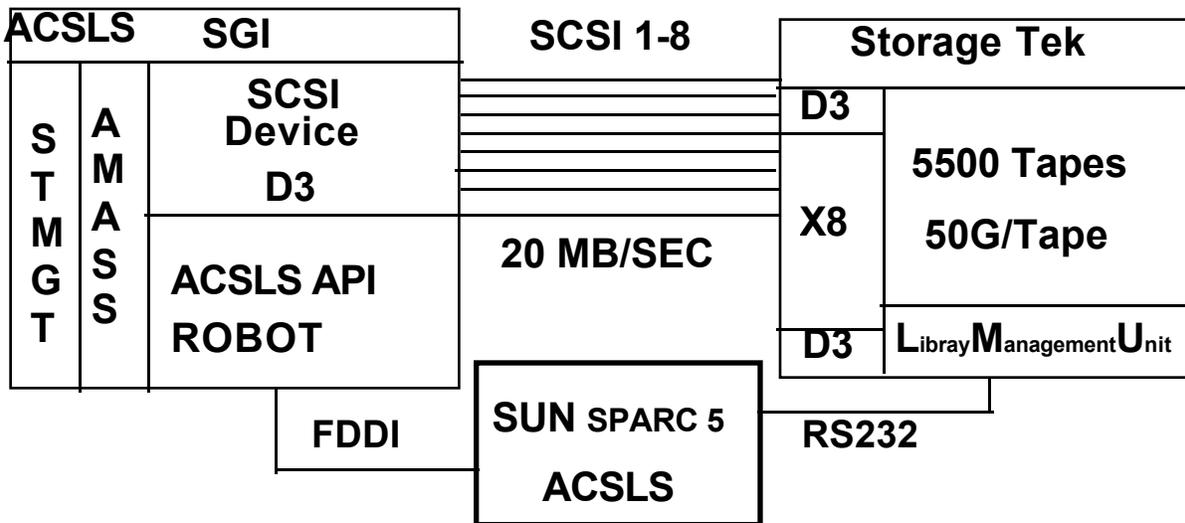
**Table 17.2-3. FSMS Media Types**

<b>Media</b>	<b>Media Purpose</b>	<b>Archive</b>
2.6 Gigabyte Optical Disk 9.4 Gigabyte Optical Disk	Archive Storage	EMASS
50 Gigabyte D3 Tape Cartridge	Archive Storage	STK

### **17.3 Archive Configuration**

The ability of the FSMS to absorb and to serve data at required rates depends on a well integrated, well tuned combination of high performance archival hardware and software. All the ECS DAACs have the same architecture and constituent components. The DAACs differ only in the size and particulars of equipment.

Figure 17.3-1, depicts the overall configuration for the STK main storage. For a representation of RAID attachment see Figures 17.3-2.



**Figure 17.3-1. Archive Hardware and Software Configuration for STK**

AMASS controls the physical storage of the data in the repository and is hosted on a SGI multiprocessor Challenge class server. The data collection resides in the STK Powderhorn robotic silo and is recorded using D3 helical scan tape drives from Storage Tek. SGI RAID is used for the temporary caching of data en route to and from the robotic silo.

As shown, the tape drives (D3) residing in the Storage Tek robotic silo are directly connected to the SGI Host via Fast-And-Wide SCSI II channels. Each channel is individually capable of the throughput of 20 MB/sec. Each of the eight tape drives is rated by the manufacturer capable of 11.2 MB/sec sustained throughput.

The control of the robotic mechanism of the silo (loading and unloading of the tapes) is affected via the STK ACSLS interface software running on a SPARC 5 SUN workstation. AMASS addresses the ACSLS through a network connection. ACSLS controls the robot directly via an RS232 line.

Figure 17.3-2, RAID Configuration, illustrates the configuration as of 8/19/97. The RAID level configuration is 3.

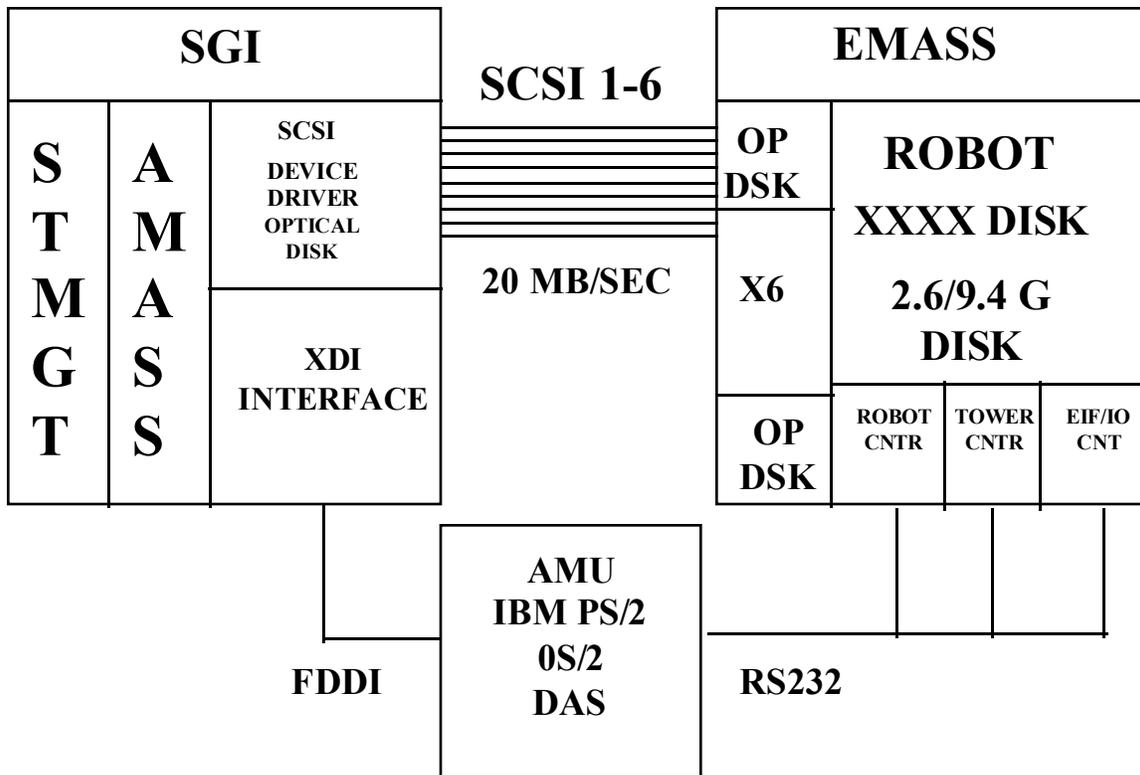
SGI CHALLENGE XL		SGI SCSI RAID3 PHOENIX CONTROLLERS					
<b>6 CPUs</b>  <b>512 MB MAIN MEMORY, 2-WAY INTERLEAVED</b>  <b>32 KB DATA CACHE 1024 K STRIPE</b>  <b>8 RAID SCSI CONTROLLERS</b>	<b>20 MB/SEC</b>	Parity	9 GB	9 GB	9 GB	9 GB	<b>SPA</b>
	<b>20 MB/SEC</b>	Parity	9 GB	9 GB	9 GB	9 GB	<b>SPB</b>
	<b>20 MB/SEC</b>	Parity	9 GB	9 GB	9 GB	9 GB	<b>SPA</b>
	<b>20 MB/SEC</b>	Parity	9 GB	9 GB	9 GB	9 GB	<b>SPB</b>
	<b>20 MB/SEC</b>	Parity	9 GB	9 GB	9 GB	9 GB	<b>SPA</b>
	<b>20 MB/SEC</b>	Parity	9 GB	9 GB	9 GB	9 GB	<b>SPB</b>
	<b>20 MB/SEC</b>	Parity	9 GB	9 GB	9 GB	9 GB	<b>SPA</b>
	<b>20 MB/SEC</b>	Parity	9 GB	9 GB	9 GB	9 GB	<b>SPB</b>
	<b>20 MB/SEC</b>	Parity	9 GB	9 GB	9 GB	9 GB	<b>SPA</b>

**Figure 17.3-2. RAID Configuration 8/19/97**

**Note**

**This configuration is the same for the EMASS browse system.**

ECS browse capabilities depend on its ability to serve data to its users at required rates on a well integrated, well tuned combination of high performance archival hardware and software. Figure 17.3-3, depicts the overall configuration for the EMASS browse system. For a representation of RAID attachment see Figures 17.3-2.



**Figure 17.3-3. Archive Hardware and Software Configuration for EMASS**

AMASS controls the physical storage of the data in the browse unit and is hosted on a SGI multiprocessor Challenge class server. The data collection resides in the EMASS AML/2 and is recorded using a combination of optical disk drives, 2.6 Gigabyte and 9.4 Gigabyte, by Hewlard Packard and TBD. SGI RAID is used for the temporary caching of data en route to and from the AML.

As shown, the optical disk drives residing in the AML are directly connected to the SGI Host via Fast-And-Wide SCSI II channels. Each channel is individually capable of the throughput of 20 MB/sec. The 2.6 G drives are capable of 3.4MB per sec read and 1.7MB per sec writes with a 25 msec average seek time. The 9.4 G drives capabilities are not yet known.

The control of the robotic mechanism of the AML (loading and unloading of the disks) is effected via the GRAU DAS interface software running on a IBM PS/2 with OS/2. AMASS addresses the DAS through a network XDI interface connection. DAS controls the robot directly via an RS232 line.

## 17.4 Graphical User Interface (GUI)

Both custom and COTS software are supplied with a configurable X-Windows/Motif GUI interface. Many functions available on the command line can also be performed from the GUI.

The GUI is configured by editing a button file. The System Administrator can comment out certain buttons, thus removing those functions from a user's GUI. The button file is then provided to the user and appropriate paths are set to locate the GUI interface button file and executables.

Data that are inserted into the archive can be received from a number of sources including the Ingest Subsystem, Processing Subsystem, other DAACs, and Authorized Users. The Data Ingest Technician (DIT) or other operators can monitor the insertion of data into the archive using the Data Server Subsystem (DSS) GUIs.

1. DDIST Graphical User Interface (GUI).
2. STMGT GUIs

The Activity Checklist depicted in Table 17.4-1 provides an overview of the Graphical User Interface section. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

**Table 17.4-1. Graphical User Interface- Activity Checklist**

Order	Role	Task	Section
1	DAM/DIT	Graphical User Interface	(I) 17.4
2	DAM/DIT	Launching DSS GUIs Using UNIX Commands	(P) 17.4.1
3	DAM/DIT	Storage Management Control GUI	(I) 17.4.2
4	DAM/DIT	AMASS GUI	(P) 17.4.3
5	DAM/DIT	AMASS GUI File Function	(I) 17.4.3.1
6	DAM/DIT	AMASS GUI Tasks Function	(I) 17.4.3.2
7	DAM/DIT	AMASS GUI Admin Function	(I) 17.4.3.3
8	DAM/DIT	AMASS GUI Preferences Function	(I) 17.4.3.4
9	DAM/DIT	AMASS GUI Help Function	(I) 17.4.3.5

### 17.4.1 Launching DSS GUIs Using UNIX Commands

The following procedure demonstrates how to bring up a DSS GUI. It is expected that eventually the ECS DAAC desktop will be configured to allow access to the DDIST and other GUIs using icons. In the interim, access to the DSS GUIs must be gained through the use of UNIX commands. In any case, launching the GUIs starts with the assumption that the applicable servers are running and the operator has logged in. Table 17.4-2 presents the steps required to follow the procedure. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. Access the command shell.
  - The command shell prompt is displayed.

**NOTE:** Commands in Steps 2 through 12 are typed at a UNIX system prompt.
2. Type **xhost +** and then press the **Enter** key.
3. Start the log-in to the DDIST client server by typing either **telnet hostname** (e.g., **g0dis02**), **rlogin hostname**, or **rsh hostname** in the second window and then press the **Enter** key.
  - If you use the **telnet** command, a Login: prompt appears; go to Step 5.
  - If you use either the **rlogin** or **rsh** command, the system uses the User ID currently in use; go to Step 6.
4. When a login: prompt appears, log in as yourself by typing your **UserID** and then pressing the **Enter** key.
5. At the Password prompt type your **Password** and then press the **Enter** key.
6. Type **setenv DISPLAY clientname:0.0** and then press the **Enter** key.
  - Use either the terminal/workstation IP address or the machine-name for the clientname.
7. Type **cd /path** and then press the **Enter** key.
  - Change directory to the directory path(e.g., **/usr/ecs/mode/CUSTOM/utilities**) containing the DSS command files (e.g., **EcDsDdistGui**).
  - The *mode* will most likely be one of the following operating modes:
    - OPS (for normal operation).
    - TS1 (for testing).
    - TS2 (for other uses).

**Note:** the separate subdirectories under **/usr/ecs** apply to different operating modes.
8. To launch the Data Distribution Requests GUI, type the following command: **EcDsDdistGuiStart** and then press the **Enter** key.
  - The Data Distribution GUI is displayed.
9. To launch the Storage Management Control GUI type the following command: **EcDsStmgmtGuiStart** and then press the **Enter** key.
  - The Storage Management Control GUI is displayed.

**Table 17.4-2. Launching DSS GUIs Using UNIX Commands**

Step	What to Do	Action to Take
1	xhost	press <b>Return</b>
2	telnet <i>hostname</i>	press <b>Return</b>
3	<i>UserID</i>	press <b>Return</b>
4	<i>Password</i>	press <b>Return</b>
5	setenv DISPLAY <i>clientname:0.0</i>	press <b>Return</b>
6	cd /usr/ecs/model/CUSTOM/utilities	press <b>Return</b>
7	EcDsDdistGuiStart	press <b>Return</b>
8	EcDsStmgtGuiStart	press <b>Return</b>

### 17.4.2 Storage Management Control GUI

This tool enables operations to manage various data storage functions. These functions include the capability to set and modify configurations of various Server Types (e.g., 4mm tape, Archive Server, D3 tape), manage data location within the archive and on disk, configure stacker slots, display storage events which possibly require operator actions, and view backup/restore failures with the ability to restart a backup/restore operation. AMASS has to be up in order for the Storage management Tool to archive and retrieve files. Moreover the FTP server on the ACP host has to have debug logging enabled to write the filename of pulled files into the syslog for pull notification to the pull monitor.

The Tool is used to perform the following operator functions listed in Table 17.4-3.

**Table 17.4-3. Common ECS Operator Functions Performed with This Tool**

Operating Function	Command/Script or GUI	Description	When and Why to Use
Configure Server Devices	Storage Config Tab	Allows operators to organize and configure various Server Devices and manage data flow in and out of various archives.	As needed to add, delete, or modify the configuration of a set of Servers or a Server Device.
View the current cache statistics for the Pull Monitor cache.	Cache Stats. Tab	Allows the operator to view the Pull Monitor cache and view the statistics on its use. Operator can delete expired files.	Used when warning is displayed in the message area informing the operator the cache is getting too full.
Search Event Log	Storage Events Tab	Allows operators to find events from selected parameters	As needed to locate events.
View current requests and manage tapes	Resource Schedule Tab	Allows operators to display the storage management view of the current requests	Used to select a specific request, manage tape group, stacker and slot configurations.

Storage Management Control can be operated from any one of the 4 tabs which control the 4 components as listed above (Table 17.4-3). The operator can select the following menu functions for each component tab from the menu bar items at the top of the window:

- **File** contains the exit command to close application
- **Options** allows operator to set the polling rate for the event log for the current execution of the application.
- **Backup** allows operator to set up data files as a backup at the operator site and at operator off-sites, to view backup files and to restart backup files.
  - **Setup** allows operator to set up files for backup to on site or off site areas.
  - **Restart** shows the location of failed files and provide a restart capability, see figure 4.10.2-14 (Restart Backup).

Menus named **Selected**, **Edit**, and **View** are also present at the top of the window, but functionality to be associated with them has not yet defined. They will be used in future releases.

For a detailed description of the Storage Management GUI, refer to the 609 document Section 4.10.2.

### 17.4.3 AMASS GUIÄ

#### Note

**The AMASS GUI is a System Administrator tool, to be used only for monitoring the displayed information at this time. The GUI experiences intermittent problems known to the manufacturer and is due for complete functionality in a later software revisions 5.0.**

The AMASS software provides DAAC Operations personnel with a GUI to access the functionality of AMASS utilities and command line functions.

AAWin (AMASS Administrator Window) provides the use of the AMASS GUI. This allows the menu functions of the GUI to become queries to the on-line index and facilitates the following functions:

- Assign and delete volumes.
- Modify volume characteristics.
- Modify volume groups.
- View volume/volume group usage statistics and monitor system performance.
- Reuse a volume.

The GUI performs a subset of the administration commands. The above tasks can be done with the AMASS administration commands, which are issued from the command line. Use the following procedure to start the AMASS GUI (AAWin). Table 17.4-4 presents the steps required reboot the AMASS database. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. Login as **amass** and enter the **password**.
2. Verify that AMASS is running.

At the prompt, type: **amassstat -c**

A message will display a message indicating the status of AMASS.

3. The GUI is accessible through the AMASS directory, **/usr/amass/bin/**. To start the AMASS GUI, type: **aawin**

Note: only one aawin session can be up at a time.

4. To exit, select the menu path: **File/Exit**

For a complete description of these commands, refer to the manual *Managing the AMASS File System*.

**Table 17.4-4. Starting The AMASS GUI**

Step	What to Do	Action to Take
1	amass	press <b>Return</b>
2	amassstat -c	press <b>Return</b>
3	/usr/amass/bin/aawin	press <b>Return</b>
4	File/Exit	press <b>Return</b>

AMASS GUI menu selections are described in sections 17.4.3.1 through 17.4.3.5. Additional menu keys provide help information to the user and a quit GUI option key.

### 17.4.3.1 File

This pull down menu has the following selections:

- Exit- Exits AAWin. Closes all windows except the *sysperf* window.
- Clear Workroom- Clears the Workroom of all icons.

### 17.4.3.2 Tasks

This pull down menu has the following selections:

- Add Volumes- SCSI (This appears when there are SCSI-attached libraries.)
- Modify a Volume Group

Displays volume status and information. Volume, volume group, juke, position, label/barcode, status, used space, available space, dead space, and number of errors are displayed in this selection. The user is allowed to perform various functions on a single or combinations of volumes using this selection . These functions are the following:

- ⇒ Enable or disable space pool.
- ⇒ Add or remove directories.
- ⇒ View volume group information.

- Modify a Volume

Displays volume status and information. Volume, volume group, juke, position, label/barcode, status, used space, available space, dead space, and number of errors are displayed in this selection. The user is allowed to perform various functions on a single or combinations of volumes using this selection . These functions are the following:

- ⇒ Toggle status active or inactive
- ⇒ Toggle volume on-line or off-line

- ⇒ Changing label
- ⇒ Delete volume
- ⇒ Introduce new volume to archive
- ⇒ Quick or normal formatting of volume

### **17.4.3.3 Admin**

This pull down menu has the following selections:

- Scheduler - Opens the Scheduler Status Window.
- Sysperf - Opens the `sysperf` window displaying the AMASS I/O activity.

### **17.4.3.4 Preferences**

This pull down window has the following selection:

- Show/Hide Detail Windows - These windows give a brief description of the items the mouse pointer is touching.

### **17.4.3.5 Help**

- Opens the Help Window.

Detailed explanations of the GUI functions are located in the AMASS guide; *Using the AMASS GUI*. The AMASS guide can be viewed using Adobe Acrobat and is available electronically on servers `g0drg01` and `g0drg02` in `/usr/amass/books`.

## **17.5 Command Line Functions**

Some but not all archive functions can be accomplished using a GUI. The operator should however become familiar with all command line utilities and commands. The following table provides a list of AMASS commands and utilities.

**Table 17.5-1. Common ECS Operator Functions Performed with AMASS (1 of 2)Ä**

<b>Operating Function</b>	<b>Command or GUI</b>	<b>Description</b>	<b>When and Why to Use</b>
activate or deactivate the AMASS filesystem	<ul style="list-style-type: none"> <li>• amassstat</li> <li>• AA Win GUI</li> </ul>	displays or toggles the status of AMASS (ACTIVE/INACTIVE)	used to inactivate the file-system for maintenance and/or to reactivate it
add a volume	<ul style="list-style-type: none"> <li>• volnew</li> <li>• AA Win GUI</li> </ul>	introduces a new volume to AMASS and assigns a volume number	to add storage space for data
add space to a volume group	<ul style="list-style-type: none"> <li>• volnew</li> <li>volgroup</li> <li>• AA Win GUI</li> </ul>	adds additional volumes to an existing volume group	when more space is required in an existing volume group
create a space pool	<ul style="list-style-type: none"> <li>• volnew</li> </ul>	one or more volumes assigned to a special volume group of "SP"	to allow AMASS to automatically add space (volumes) to volume group that has run out of space
create a volume group	<ul style="list-style-type: none"> <li>• volgroup</li> <li>setvolgrp</li> <li>• AA Win GUI</li> </ul>	partitions the volumes in AMASS	to assign volumes for specific purposes within AMASS
delete a volume	<ul style="list-style-type: none"> <li>• volstat</li> <li>voldelete</li> <li>• AA Win GUI</li> </ul>	removes a volume and its files from the archive	to delete a volume and any files it contains
generate a report	<ul style="list-style-type: none"> <li>• amassreport</li> </ul>	generates formatted report and/or raw output	to extract information about files and directories from the AMASS index
back up the AMASS index	<ul style="list-style-type: none"> <li>• amassbackup</li> </ul>	performs full or partial back up of the AMASS index	any time that the system needs to be backed up other than what AMASSs automatic backup provides
put a drive into service	<ul style="list-style-type: none"> <li>• drivelist</li> <li>drivestat</li> <li>• AA Win GUI</li> </ul>	displays the current status of the drives and to change the status	when an INACTIVE drive is ready to return to service
recover dead space	<ul style="list-style-type: none"> <li>• volspace</li> <li>volcomp</li> <li>volformat</li> </ul>	compresses a selected volume	to recover dead space on volumes
reinitialize the AMASS index	refer to the vendor documentation for the command and procedure	clears out the existing index and reinitializes it to an empty index	only when AMASS is not running
reintroduce an offline volume	<ul style="list-style-type: none"> <li>• vollist</li> <li>volslot</li> <li>bulkinlet</li> <li>volloc</li> </ul>	reintroduces an offline volume to a jukebox	if data from an offline volume needs to be referenced for read access

**Table 17.5-1. Common ECS Operator Functions Performed with AMASS (2 of 2)Ä**

Operating Function	Command or GUI	Description	When and Why to Use
Remove a volume or volume group	<ul style="list-style-type: none"> <li>• vollist, voloutlet, volloc</li> </ul>	removes a volume or an entire volume group from the jukebox	to make room for new volumes or because data not being used needs to be retained
remove space from a volume group	<ul style="list-style-type: none"> <li>• vgroot #VG</li> <li>• setvolgrp /path #VG</li> <li>• volgroup</li> </ul>	removes space from one volume group to add it to another	when space is needed in another volume group
replace a full backup volume	<ul style="list-style-type: none"> <li>• voloutlet 1,</li> <li>• bulkinlet 0,</li> <li>• vollabel {to rename}</li> <li>• tapelength 1 2</li> <li>• volformat -b 256k 1</li> <li>• amassbackup -fv</li> </ul>	initializes a new backup volume and performs a full backup	when the backup volume is 95% full
restore the AMASS database	<ul style="list-style-type: none"> <li>• amassrestore</li> </ul>	restores the index either completely or to the point of the last full or partial backup	<ul style="list-style-type: none"> <li>• when the index is corrupt on the magnetic disk</li> <li>• do not use the amassrestore command when AMASS is running</li> </ul>
retrieve system usage by user	<ul style="list-style-type: none"> <li>• amassreport</li> </ul>	displays the number of files and directories owned by a user and the amount of space they take up	to get statistical information on the amount of space used by an individual(s)
retrieve system usage by volume	<ul style="list-style-type: none"> <li>• adf</li> </ul>	displays volume group, jukebox reference number, position of volume, amount of used space, number of directories and files on volume, amount of free and dead space	to get statistical information about the usage of a particular volume
reuse a volume	<ul style="list-style-type: none"> <li>• (volcomp, volstat, volclean, volformat)</li> </ul>	compresses and moves existing data to another volume, then reformats the volume	when a volume contains data no longer needed or contains mostly dead space
take a drive out of service	<ul style="list-style-type: none"> <li>• drivelist, drivestat</li> </ul>	displays and changes the status of the drive	when a drive has excessive failures or for maintenance

For a full explanation of all AMASS commands see the *AMASS System Administrator's Guide*. The AMASS guide can be viewed using Adobe Acrobat and is available electronically on servers g0drg01 and g0drg02 in /usr/amass/books.

The Activity Checklist depicted in Table 17.5-2 provides an overview of the Command Line Functions section. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides

the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

**Table 17.5-2. Command Line Functions - Activity Checklist**

Order	Role	Task	Section
1	DAM/DIT	Formatting a Volume	(I) 17.5.1
2	DAM/DIT	Formatting a Tape Volume	(P) 17.5.1.1
3	DAM/DIT	Formatting an Optical Disk Volume	(P) 17.5.1.2

## 17.5.1 Formatting a Volume

To format a volume, it must be online. A volume is placed online using the **volloc** command. If the volume is a tape cartridge, you must first set the tape length using the **tapelength** command. Formatting a volume will destroy any files on that volume. Before formatting a volume, check to make sure it does not have any files which should be saved. Tables 17.5-3 and Table 17.5-4 present the steps required to follow the formatting process. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

### 17.5.1.1 Formatting a Tape Volume

**1. Put the volume online using the following command:**

`volloc -n volnumber`

- **volnumber is the number of the volume**

**2. Verify there are no files on volume.**

`volfilelist volnumber`

**3. Set the tape length.**

`Tapelength 2 volnumber`

- **2 is the value used to set tape length for 50G tape.**
- **volnumber is the number of the volume**

**4. Format the volume.**

`volformat -b 262144 volnumber`

**5. Verify status of the volume**

`volprint -a volnumber`

**Table 17.5-3. Formatting a Tape Volume**

Step	What to Do	Action to Take
1	<code>volloc -n volnumber</code>	press <b>Return</b>
2	<code>volfilelist volnumber</code>	press <b>Return</b>
3	<code>Tapelength 2 volnumber</code>	press <b>Return</b>
4	<code>volformat -b 262144 volnumber</code>	press <b>Return</b>
5	<code>volprint -a volnumber</code>	press <b>Return</b>

### 17.5.1.2 Formatting an Optical Disk Volume

1. **Put the volume online using the following command:**

`volloc -n volnumber`

- **volnumber is the number of the volume**

2. **Verify there are no files on volume.**

`volfilelist volnumber`

3. **Format the volume.**

`volformat -b 1024 volnumber`

4. **Verify status of the volume**

`volprint -a volnumber`

**Table 17.5-4. Formatting an Optical Disk Volume**

Step	What to Do	Action to Take
1	<code>volloc -n volnumber</code>	press <b>Return</b>
2	<code>volfilelist volnumber</code>	press <b>Return</b>
3	<code>volformat -b 1024 volnumber</code>	press <b>Return</b>
4	<code>volprint -a volnumber</code>	press <b>Return</b>

## 17.6 Storing New Data in Archive Repository

Storing new data in the archive repository is largely an automated process that does not normally require operator interaction and occurs as a result of operations such as ingest and data production. Any operations involvement would be to support archive administration operations, resolve problems, periodically monitor working storage and archival operations, and coordinate with the appropriate external/internal sources to resolve schedule conflicts.

Because of the automated nature of this process, step-by-step procedures are not required however, a typical archive scenario is shown.

### Insert Data into the Archive Scenario

NOTE: The scenario that follows describes the insertion of data into the Data Server at an ECS DAAC and is derived from document 605-CD-002-001, Release B SDPS/CSMS Operations Scenarios for the ECS Project (March 1996).

Data and associated metadata can be received from numerous sources. This scenario focuses on a routine data insert from the Science Data Processing subsystem. It assumes that all components are active and not in any degraded modes of operation, that ESDT data collection types have been established, and that the data server's nominal activity rate is 50% of capacity.

Initiate the session between the Processing Subsystem and the Data Server.

The Processing Subsystem sends a Data Insert Request to the Science Data Server.

Receipt of the request is logged (via MSS Logging Services) and a request identifier is associated with the Data Insert Request.

The content of the request is validated; if successful, it is queued for later processing. If unsuccessful, a rejection message is issued.

The operator may examine the progress of a request by following menu path Other Screens→Logs & Reports (MSS). In the Data Server Subsystem, open Storage Manager (DSS-OSM) to browse the log files provided by the Management Services Subsystem (MSS); see next section for details.

Transfer data from Processing Subsystem to Data Server.

The queued Data Insert Request is reached and processing begins.

Associated data granules and metadata are transferred from the Processing Subsystem to the Data Server working storage.

Data transfer status, including recoverable errors, are indicated in the event log via MSS Logging Services.

The operator may check request status at any time using the DSS-OSM Request Screen.

Validate metadata received from the Processing Subsystem.

The metadata update file(s) produced by the associated product PGEs are validated for completeness and correctness.

Validation success or failure is logged via MSS Logging Services with the associated Data Insert Request Identifier and the appropriate status message is returned to the Processing Subsystem.

Store data granules in the permanent archive.

Upon successful validation of the metadata update file, Science Data Server sends a Data Storage Request to Storage Management.

The data granules in working storage associated with the Data Storage Request are stored.

The Archive Activity Log (via MSS Logging Services) records each data product being stored and storage status of each storage operation.

A checksum value is calculated for each data object associated with each granule.

The checksum value, storage status, and other selected metadata are forwarded to the Science Data Server in a status message upon completion of the Data Storage Request.

Store metadata.

Science Data Server receives and logs the Data Storage Request status message from Storage Management.

The additional metadata items are validated.

The PGE produced metadata update file and the storage management provided metadata are loaded into the metadata database.

The status of the metadata load is entered in the event log.

The operator may examine the progress of the insert by following menu path Other Screens→Logs & Reports (MSS) in the DSS-OSM to browse the log files provided by the MSS.

Report Data Insert Request status.

The Science Data Server logs completion of the Data Insert Request in the event log and reports completion of the Data Insert Request to the Data Archive Manager, the operator console and to the insert Requester (the Processing Subsystem in this scenario).

Each of the above entities would also be notified if the request failed and reason(s) for failure identified.

Process subscriptions based on newly inserted data.

The Science Data Server will then examine the event list for all subscriptions for that event.

Subscription notifications are sent to the appropriate entities as appropriate and distribution processing is initiated.

The Science Data Server sends an Advertisement Update Message to the Advertising Server to advertise the new data.

### 17.6.1 Monitor Insertion of Data into the Archive

Data that is inserted into the archive can be received from a number of sources including the Ingest Subsystem, Science Data Processing Subsystem, other DAACs, and Authorized Users. The DIT can monitor the insertion of data into the archive using the Ingest GUI or, by going to the appropriate server (e.g. g0drg01) following archive directory and doing a list: `/dss_stk1/mode/datatype` where *mode* is the operating mode i.e. **TS1**, **TS2**, **SHARED** or **OPS** and *datatype* is the type of data being archived, i.e. **aster** or **modis**. For detailed information on the functionality of these GUIs, review the 609 User's Guide document.

## 17.6.2 Monitor Insertion of Data into the Archive using AMASS

AMASS provides a capability to monitor the system with a number of commands. Table 17.6-1 provides a list of helpful AMASS software commands that may be used to monitor insertion of data into the FSMS system. These commands are accessible through the `/usr/amass/bin` directory.

**Table 17.6-1. AMASS Monitoring Commands**

amasstat	_view or toggle AMASS status
dirfilelist	_view subdirectories or files under a directory
drivelist	_Listing and status of the drives.
jobs	_displays jobs pending and status of jobs completed
quedisplay	_displays request in the que and volumes allocated to the drives
sysperf	_system through put and individual drive data rate performance, drive status, and volume mounts
vglist	_view attributes for a volume group
vgroot	_view relative path for a volume group
volstat	_view status (active or inactive) or, change status of a volume
volusage	_view statistics for all volumes
vollist	_Listing and status of the volumes in library.
volSPACE	_view volumes with a specified percentage of dead space

The AMASS GUI is available for the DAM to view drive, file, file system, volume, and juke box statuses. The GUI is to be used for monitoring only. All drive juke, file or volume changes should be done through command line operations. The GUI is accessible through the AMASS directory, `/usr/amass/bin/gui`.

## 17.6.3 Monitor Archive Status Using ACSLS

ACSLs provides the capability to monitor the Storagetek portion of the FSMS system. Although ACSLS does not keep track of data files, equipment and media status may indicate any problems in accessing the data. Table 17.6-2 provides a list of ACSLS software commands that are useful in monitoring the system. These are query commands that can be used to status specific items, or all in the category specified. These commands are accessed through the command procedure shell window of the ACSLS workstation.

**Table 17.6-2. ACSLS Monitoring Commands**

query server all	_display status of all servers
query request all	_display status of all request
query volume all	_display status of all volumes
query drives all	_display status of all drives
query lsm all	_display status of all lsms
query cap all	_display status of all caps
query acs all	_display status of all acs
query port all	_display status of all ports

#### **17.6.4 Monitor Insertion of Data into the Archive using DAS**

DAS provides the capability to monitor the status of the EMASS portion of the FSMS system. Table 17.6-3 provides a list of DAS Administration commands that are useful in monitoring the system. These are query commands that can be used to status specific items, or all in the category specified. These commands are accessed through the command procedure shell window of the DAS workstation or from the PC located on the AML.

**Table 17.6-3. DAS Monitoring Commands**

list	_requests DAS to list currently active requests
view	_displays the status of a volume
listd	_display status of drives
robstat	_display or change status of robot
qvolsrange	_display list of accessible volumes within the specifies range

#### **17.6.5 Fault Notification**

The fault notification process in the archive begins with an error condition arising with software, hardware, or data related faults. The problem notification between the DIT and the DAM will most likely be verbal, although electronic notification may be necessary at times.

The DAM or DIT will use the trouble ticket system available on site to officially notify the DAAC of warranted archive problems. The trouble ticketing procedures are found in the Problem Resolution section of the DID 611 document (section 8). The DAM or DIT may notify appropriate DAAC personnel while still in the error evaluation mode and before the trouble ticket creation process. This stipulation allows for the timely notification process to begin before an official document is issued. Table 17.6-4 presents the steps required to follow the fault notification process. If you are already familiar with the fault notification procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **Identify problem with the ingest, archive, or data distribution subsystems.**
2. **Investigate error messages or problem indications.**
3. **Notify DAM of problem via person, phone, or electronic means.**
4. **DAM identifies and evaluates severity of problem. DAM must determine downtime and production impact, if any. Some problems may require a software reboot or simply putting damaged hardware off-line and continuing until servicing is possible.**
5. **DAM investigates error messages or problem indications: software, hardware, data related.**
6. **Evaluation should determine if the problem is repairable or if repair requires attention of the specified maintenance contractor.**
7. **Solve problem if possible.**
8. **Notify personnel deemed necessary if severity warrants via phone, in person or by electronic means (optional step). Some circumstances deemed severe enough may require notifications to DAAC staff in evaluation stage before a trouble ticket is created. This does not circumvent the trouble ticket process. It only allows for the repair effort process to start without addition downtime awaiting official notices.**
9. **Create Trouble Ticket.**
10. **DIT/ DAM officially notify DAAC of a problem and severity with a trouble ticket.**
11. **Notify service personnel required to repair problem if appropriate.**

**Table 17.6-4. Fault Notification-Quick-Step Procedure**

<b>Step</b>	<b>What to Do</b>	<b>Action to Take</b>
1	DAM or DIT Identify problem with the archive system	investigate error messages or problem indications
2	DAM notified of problem	oral, phone or electronic notification
3	DAM identifies and evaluates severity of problem	investigate error messages or problem indications: software, hardware, data related
4	Repair problem in timely manner if possible	Solve problem if possible
5	Notify personnel deemed necessary if severity warrants (optional step)	oral, phone or electronic notification
6	DIT/ DAM officially notify DAAC of a problem and severity	Create Trouble Ticket in Remedy and or DDTS
7	Notify service personnel required to repair problem if appropriate.	Notify appropriate personnel

## 17.6.6 Recovery from Failure to Store or Retrieve Data

When a storage failure occurs, the request is failed and the reason for failure is returned to SDSRV. The Storage Management Control GUI as well as AMASS commands and utilities permit the operator (e.g., Data Ingest Technician) to review the error messages. The operator can also monitor system tail logs in UNIX windows in order to track storage activity. For AMASS based archives, the most likely cause of a failure will be file copy errors due to network problems, mount point problems, AMASS being down, or failure to associate a volume group with a directory in the AMASS cache. AMASS will not report write errors even if all of the drives are off-line. Only when there is no media in AMASS will a write error be reported. Table 17.6-5 presents the steps required to follow the fault notification process. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **Login as amass or root and enter the password**
  - Remember that your password is case sensitive.
2. Use the **amassstat** command to determine if AMASS is running.
3. Use the **amass\_log** script and **SYSLOG** to display AMASS errors.
  - The **amass\_log** script is located in the `/usr/amass/tools` directory.
  - The **SYSLOG** is located in the `/var/adm/` directory. It may be necessary for the operator to look at the syslog on the host where the file is located to see if there are error messages which may explain the failure to access a file.
  - Each AMASS entry in the system log file has a date and time stamp. Several days' worth of messages may exist in the log. When reviewing the output to determine if any of these messages might indicate the cause of the problem, make sure that the messages being looked at are for the correct date and time.
4. See the "Error Messages" in the appendix of the *AMASS System Administrator's Guide, Version 4.9*, for probable causes and possible solution to the problem. The AMASS document can be viewed using Adobe Acrobat and is available electronically on servers `g0drg01` and `g0drg02` in `/usr/amass/books`.
5. After the corrective action has been performed, see if the problem is corrected.
6. If the problem persists further problem diagnosis should be attempted starting with the procedures below in sections 17.6.6.1 (Write errors) or 17.6.6.2 (Read errors).

**Table 17.6-5. Recovery from Failure to Store or Retrieve Data Quick-Step**

Step	What to Do	Action to Take
1	<b>amass</b> or <b>root</b>	press <b>Enter</b>
2	<b>amassstat</b>	press <b>Enter</b>
3	<b>amass_log</b>	press <b>Enter</b>
4	Correct the problem	
5	Verify correction	

### 17.6.6.1 Diagnoses and Investigation of Write Errors

Write errors to the archive should be infrequent. If the archive is a robotic library which is fronted by the AMASS software, error messages in /var/adm/syslog will show the error messages from the AMASS software. If the archive is a disk based archive, then the software will receive the write errors and report them via operator notification and MSS error logging.

#### 17.6.6.1.1 Causes of Write Errors

##### With AMASS

*AMASS off-line* - software will capture the error and log this since the directory that is being written to will not exist. However, the nature of the write error will not be detected.

*All Drives off-line* - Cache space will fill up, write requests will be accepted but, all new data sent to cache will not be captured. The data transfer requests hang and do not return an error. Current code does not allow for detection of this condition. Write requests to AMASS can not be killed. The operator will have to diagnose this condition after being notified by Tivoli that AMASS drives are off-line or by noticing problems while looking at the log files.

*No media associated with the directory* - will cause a write error which is detectable by the software. The nature of the error will not be detected.

##### Without AMASS:

*Disk Partition Filled up* - software will capture this condition although the error condition will not be known.

##### With or without AMASS

*Directory does not exist* - will cause a write error

##### Undetected write errors

*AMASS: media write failure* - will cause the drive to go off-line and the media volume to go off-line as well. The error will be written to /var/adm/syslog. No error will be detected by the application software. The operator can execute a /usr/amass/bin/drivelist to see which drive has been put off-line.

### 17.6.6.2 Diagnoses and Investigation of Read Errors

When a read error is encountered by AMASS, both the drive and the tape will be taken off-line. The application will be notified of the read failure. The Archive Server will log an error message when the read failure is returned. The log message will include the name of the file, the secondary path for the file, the checksum for the file, and a reason for the failure. If the reason for failure is a checksum mismatch on retrieval, then the file will have to be restored. If the reason for failure indicates the media was off-line, then further investigation will have to take place to determine why the tape was off-line. This could be the result of a write error, a read error on the file, or a read error on another file that caused AMASS to take the tape off-line. For a tape that is off-line, visual inspection or more likely, the need to have vendor maintenance remove the media from the drive, will indicate that a tape is damaged. Any requests for files on that tape will fail or be served from backup. It will be important that the list of files that will be created for restoring a tape from backup be kept and searched when new files are reported missing. This should reduce the number of times that certain procedures have to be performed.

This operations concept builds on the operations concept for reviewing a read error in the first case, and the concept of determining which file was damaged in a situation where data has been recovered from damaged tape.

#### 17.6.6.2.1 File was not successfully retrieved

1. The operator will be notified of Retrieval errors on the STMGT GUI (NCR 16497), the reason for the failure, and the file path for which the file was accessed.
2. The operator will use the path and filename to get the volume id by using the AMASS command **fileprint *fullpathname***.
3. Once the tape is found, then a volist given the volume id will indicate the state of the tape. If the tape is not active, then investigation using the AMASS logs will have to be done to determine if there was a drive error on the read which took the tape and a drive off-line. If the tape is on-line then the operator will have to determine the cause of the read error from the STMGT GUI.
4. The Operator must now decide whether the effected tape is still useable or not:
  - In the event that the tape appears not to be physically damaged and only a small number of files on the tape have reported read failures recovery of those files alone can be attempted. This should use the procedure “Data Recovery Procedure for Known Files” in section 17.9.2.2. A small number of files from more than one tape may also be handled together at this stage.
  - Alternatively if the tape is visibly damaged or is suffering multiple read failures recovery of the entire tape can be attempted. This should use the procedure “Data Recovery Procedure for an Entire Tape” in section 17.9.2.1.

### 17.6.7 Deleting Files From the Archive using the AMASS GUI

Deleting files from the archive can be an automated process, with a window provided to show files available for deletion based on system requirements. The AMASS GUI provides a window that allows file deletions. For detailed instructions see AMASS document *Using The AMASS GUI*.

## 17.7 Archive Backup

AMASS gives you the ability to manage archive and backup applications from a variety of hosts on the network using one or more protocols and any backup solution that can write disk files, for example, tar or cpio.

Because the online AMASS database is the database to the media contents of an AMASS volume set, it must be protected. AMASS provides an automated procedure to back up the database to a dedicated volume in the library. The backup process supports both full and partial backups and can be run either automatically by AMASS or manually by the system administrator. However, for standalone drives you must manually backup the database. Text to insert in 17.7/17.6.6:

Archive data recovery and restoration requirements create backup tapes for storage at local as well as designated remote sites. The arrangement eliminates a single point of failure in data recovery and restoration for the individual DAACs.

Operational staff create these tapes at regular intervals by the using manual commands or automated scripts. The backup procedure creates a tape for local storage in the archive and on-site. The second backup transfers to tape for shipping or to a temporary file for transmit to the designated off-site storage location.

GDAAC sends its backup data to a location at Goddard, but separate from the GDAAC.

Backup data stores that data that which would be hard to reproduce if needed. This data includes the following types: ancillary, metadata, algorithms, engineering, calibration, systems and application software, and selected other data depending on need.

Because the above recovery functions are automated and can be executed from the startup script upon system reboot, the AMASS recovery, startup, and file system mount can all be done in the same fashion as the handling of other UNIX file systems.

Archive data backup is largely an automated process. Automatic and manual backup and restore operations ensure data integrity and safety. Backups are called on automatically to satisfy Read requests where the Read from Primary has failed. As a clarification of terms, backup is used in two contexts.

The first context involves a fully automated process and is set up by the System Administrator via a *cron* job. This process backs up the AMASS database with options, full (File System Index and Journal Files) or partial (Journal Files only) database backup. This same process can also be duplicated using a AMASS software command. This process backs up the AMASS database at

the operators convenience or when necessary for performing maintenance or troubleshooting on the system.

A second context of backup pertains to the backup of actual archive data. This data is selected for backup by the severity of efforts to recover in event of its loss. This data is saved in the archive, saved to a local site, and saved to a remote site. This replication is essential to data safety.

The actual data backup is performed with the custom software provided or by manual operations. The custom software automatically backs up selected data types. Configured software will transfer the backup data simultaneously with the actual data transfer to the archive parent volume or store the data in cache for a later transfer to backup volumes.

The Activity Checklist depicted in Table 17.7-1 provides an overview of archive data backups. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

**Table 17.7-1. Archive Data Backup- Activity Checklist**

Order	Role	Task	Section
1	DAM/DIT/SA	AMASS Database Backup	(I) 17.7.1
2	System Administrator (SA)	AMASS Automated Backup	(I) 17.7.1.1
3	DAM/SA	AMASS Manual Backup	(P) 17.7.1.2
4	DAM/SA	AMASS Database Manual Restore	(P) 17.7.1.3
5	DAM/SA	ACSL Database Backup and Restore	(P) 17.7.2
6	DAM	Backing Up Archive Data	(I) 17.7.3
7	DAM	Generate List of Data to be Backed Up	(P) 17.7.3.1
8	DAM/SA	Creating Local Backup Tapes	(P) 17.7.3.2
9	DAM/SA	Creating Off-Site Backup Tapes	(P) 17.7.3.3

### 17.7.1 AMASS Database Backup

AMASS software provides two backup procedures. One, fully automated, performs a full backup on the first day of each month along with selectable full or incremental backups at regular intervals set by the system administrator. The current setup initiates a partial backup every evening at 2 a.m. A selection of a full backup involves Journal and File System Index files. The second procedure is partial backup involving only Journal files.

The AMASS software also provides a manually performed backup procedure, **amassbackup** that performs the same functions as the automated backup except with manual intervention.

### 17.7.1.1 AMASS Automated Backup

The online database of AMASS needs protection. It is the index to the media contents of the AMASS volume sets. This procedure performs automatically without outside intervention. The Systems Administrator can modify the frequency of these backups and add partial backups for another time by changing the *cron* job which initiates the backup.

### 17.7.1.2 AMASS Manual Backup

This second procedure involves logging into AMASS and commanding the backup script, **amassbackup**, which utilizes either full or partial options. This command also includes capability to transfer to a tape device or to a designated archive volume. Since the system performs the automated backup without intervention, only the second procedure is described below.

This backup procedure utilizes a backup volume or tape device. Please note that both methods only back up the File System Index and Journal files. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

**1. At the UNIX prompt, type amass or root and enter the password.**

- Logs you into AMASS

**2. Enter AMASS command:**

**amassbackup [-fv]**

**Table 17.7-2. AMASS Backup Command-Quick-Step Procedure**

Step	What to Enter or Select	Action to Take
1	<b>amass</b> or <b>root</b>	press <b>Return</b>
2	<b>amassbackup [-fuv] [-d tapedevice]</b>	press <b>Return</b>

Further explanation of the command is found in the AMASS System Administrators Guide. The AMASS guide can be viewed using Adobe Acrobat and is available electronically on servers g0drg01 and g0drg02 in /usr/amass/books.

### 17.7.1.3 AMASS Database Manual Restore

Restoring the AMASS database is a manual process which must be initiated by either the System Administrator or, the DAM. The AMASS database is restored using the AMASS command, **amassrestore**. The **amassrestore** command will restore the last full backup, the last partial backup

and all journal transactions that occurred since the last backup. Upon execution, the `amassrestore` command will create a sub-directory under `filesysdb` called `journal`. All restored files will be copied to the journal directory.

This restore procedure utilizes a backup volume or tape device. Please note that both methods only restore the File System Index and Journal files. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

**1. At the UNIX prompt, type `amass` or `root` and enter the password.**

- Logs you into AMASS

**2. Enter AMASS command:**

**`amassrestore [-fuv]`**

***Table 17.7-3. AMASS Backup Command-Quick-Step Procedure***

Step	What to Enter or Select	Action to Take
1	<b><code>amass</code> or <code>root</code></b>	press <b>Return</b>
2	<b><code>amassbackup [-fuv]</code></b>	press <b>Return</b>

Further explanation of the command is found in the AMASS System Administrators Guide. The AMASS guide can be viewed using Adobe Acrobat and is available electronically on servers `g0drg01` and `g0drg02` in `/usr/amass/books`.

### **17.7.2 ACSLS Database Backup and Restore**

The ACSLS databases are located on disk on SUN workstations; each library silo having its own dedicated SUN. ACSLS provides a script to perform its database backup. This script is run from the ACSMA `cmd_proc` window. The ACSLS database should be backed up periodically. StorageTek recommends that you use `bdb.acsss` to back up the database to tape after any of the following conditions:

- Running `acsss config`
- Importing or converting the database.
- A significant number of enters or ejects.
- A large number of scratch mounts.
- A significant number of volume state changes, such as from scratch to data or from locked to unlocked.
- Any database recovery.

You can only use backups created by bdb.acsss to restore the ACSLS database and you must use rdb.acsss to restore it. Similarly, you can only use the db\_export.sh, and db\_convert.sh database utilities to export, and convert/import, the ACSLS database. For more information on exporting and converting the ACSLS database refer to the *ACSL S Installation and Configuration Guide*.

To ensure that you recover an accurate and consistent database, always use the most current database backup.

After you upgrade to a new version of ACSLS, do not use database backups or exports created with previous versions. Make sure, however, to create a new backup as soon as you have upgraded.

Use the bdb.acsss utility to back up the ACSLS database.

When the server disk that contains the database reaches a predefined limit, ACSLS automatically creates a checkpoint backup file to disk. You should also, however, periodically run the bdb.acsss utility to manually create checkpoint files (especially to create tape backups that can be stored offsite). During ACSLS operations, transactions with the library create redo log files. Table 17.7-4 describes the database checkpoint and redo log files. If the database fails, you can recover the database using the rdb.acsss utility. Retain all utility event logs. These logs will help StorageTek to resolve any problems.

**Table 17.7-4. Checkpoint and redo log files.**

File Type	Definition and Use
checkpoint files	Provides a point-in-time snapshot copy of the entire database
redo log files	Transaction records of database changes made since the last checkpoint. During database recovery using rdb.acsss, these files are applied sequentially to the checkpoint to re-create the database including all transactions since the checkpoint.

### 17.7.2.1 ACSLS Database Backup Script

If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **Log in as acsss and enter the password.**
  - Logs you into acsss

2. Load tape into backup drive.
3. If you enter `bdb.acsss` with no options, the backup utility defaults to the default tape device attached and configured to the ACSLS server. At `acssa` prompt, enter:
  - **bdb.acsss**
  - The `bdb.acsss` utility backs up the ACSLS database and miscellaneous library resource files.
4. **For backup to a specific drive or file; enter the utility and options:**

```
_  bdb.acsss [-f filename or tape~device] [-o]
```

  - **-f *tape\_device***  
specifies any tape device attached and configured to the ACSLS server.
  - **-f *filename***  
specifies a UNIX file to contain the ACSLS database. You must have write permissions to the file.
  - **-o** is ignored; provided for compatibility with previous 11 ACSLS versions.

**Table 17.7-5. Create ACSLS Back Up - Quick-Step Procedures**

Step	What to Enter or Select	Action to Take
1	<code>acsss</code>	press <b>Return</b>
2	<code>bdb.acsss [-f db_file   tape~device] [-o]</code>	press <b>Return</b>

### 17.7.2.2 ACSLS Database Restore Script

ACSLs provides the `rdb.acsss` utility to restore the database in case of severe disk or data problems. Provided you have made regular backups, you should be able to restore the database with little or no loss of data. It will probably be necessary to restore the database in any of the following situations:

- After a system crash.
- Anytime the database can not be started.
- Anytime there is a physical or logical error in the database.

If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **Log in as acsss and enter the password.**
  - Logs you into acsss
2. Load the restore tape into backup drive.
3. If you enter bdb.acsss with no options, the backup utility defaults to the default tape device attached and configured to the ACSLS server. At acssa prompt, enter:  
**rdb.acsss**
  - The rdb.acsss utility restores the ACSLS database and miscellaneous library resource files.
4. **To restore from a specific drive or file; enter the utility and options:**  
**rdb.acsss [-f filename or tape~device] [-o]**
  - **-f tape\_device**  
specifies any tape device attached and configured to the ACSLS server.
  - **-f filename**  
specifies a UNIX file to contain the ACSLS database. You must have read permissions to the file.
  - **-o** is ignored; provided for compatibility with previous 11 ACSLS versions.

**Table 17.7-6. Create ACSLS Restore - Quick-Step Procedures**

Step	What to Enter or Select	Action to Take
1	<b>acsss</b>	press <b>Return</b>
2	<b>rdb.acsss [-f db_file   tape~device] [-o]</b>	press <b>Return</b>

### 17.7.3 Backing Up Archive Data

During normal operations, data will be backed up automatically to volume groups according to parameters set in the ESDT. When an ESDT is loaded into the system, part of the information that is given is the Archive Id, Backup Archive Id, and off-site id. The Archive Id and Backup Archive Id dictate where the file will be stored for the primary and backup copies. Backup Archive Id and off-site id may be empty strings, in which case no backup is done.

The Archive Id and Backup Archive Id are both comprised of two parts: the server key and the logical volume group indicator. The server key is used by the code to attach to the correct archive server when data for the ESDT is ingested or acquired. The logical volume group

indicator is used by the archive server to write the file to the correct volume group in the archive. The off-site id is a three character id of the DAAC which is doing off-site storage for that ESDT. The software supports having the three character designation for the local DAAC be the off-site id. In this case, the file will be backed up to a volume group within the local archive. The STMGT operations GUI can be used to get information about the pathnames in AMASS that map to the different logical volume group identifiers. Logical volume group identifiers are also configured via the GUI.

For various reasons however, it may be necessary to manually backup data. To backup specific data, the DAAC Archive Manager (DAM) will generate or will have generated for him/her a list of data types which are designated for local or off-site backup. At the time the files are archived they are written to specific volume groups which correspond to the specific data type(s). Only files belonging to the data type are written to the tapes in a specific volume group. Hence, by knowing which data types are designated for backup, the DAM can determine the tapes which should be backed up locally and for off-site storage. This can be accomplished using the AMASS administration **vollist** command. The DAM can determine how many tapes must be backed up by using this command.

If there are other files designated for local and off-site backup which have not been written to a specific volume group, the DAM can use the appropriate AMASS administration commands, **dirfilelist** and/or **volfilelist**, to locate the appropriate archive volume which contains the designated archived files.

For more information about these AMASS commands, refer to the *AMASS System Administrators Guide*. The AMASS guide can be viewed using Adobe Acrobat and is available electronically on servers g0drg01 and g0drg02 in /usr/amass/books.

### **17.7.3.1 Generate List of Data to be Backed Up**

Certain volume groups are dedicated for storing backup data. Using the AMASS administration commands and UNIX utilities, the DAM generates a sorted list of files contained on each volume in a backup volume group. It is important to sort the list by volume number to minimize the number of volume mounts and dismounts. The sorted list is edited to remove files which are not desired to be backed up.

Table 17.7-7 presents the steps required to generate a list of data to be backed up. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1. At the UNIX prompt, type; amass or root and enter the password.**
  - Logs you into AMASS.

2. **To generate a list of all files on a backup directory type:**  
dirfilelist *pathname*
  - **pathname** is the path of the backup directory i.e., /dss\_stk2/modis/backup.
3. **To generate a list of the files on each volume, type:**  
volfilelist *volumenumber*
  - The volume numbers used should be the ones designated for data backup.

**Table 17.7-7. Generate List of Data to be Backed Up - Quick-Step Procedures**

Step	What to Enter or Select	Action to Take
1	<b>amass</b> or <b>root</b>	press <b>Return</b>
2	<b>vollist</b>	press <b>Return</b>
3	<b>volfilelist</b> <i>volumenumber</i>	press <b>Return</b>

### 17.7.3.2 Creating AMASS Local Backup Tapes

Using the output from section 17.7.3.1 as input, create local backup tapes using the appropriate UNIX commands to copy all of the files to a designated volume group. After creation of the backup tapes, remove the tapes from the AML if required.

Although some backup volumes may be stored locally external to the Powderhorn LSM, most will be stored within a library silo. Table 17.7-8 presents the steps required to create a volume group to be used for the creation of local backup tapes. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **At the UNIX prompt, type; amass or root and enter the password.**
  - Logs you into AMASS.
2. **Create the subdirectory (if not already created) by entering the following:**
  - a) **mkdir /dss\_stk1/vg22/local\_backup/**
    - The directory above is only an example, actual directory structure is determined by the System Administrator.
  - b) **Press Return.**
3. **Create a volume group and associate it with the subdirectory just created by typing:**  
setvolgrp path volumegroup
  - Path is the full UNIX system path name of the directory whose directory tree is being assigned to the volume group.

- Volumegroup is a number between 0 and 2047 assigned to the volumes by the volgroup command.
  - Ex. setvolgrp /dss\_stk1/vg22/local\_backup 22
4. **The operator goes to the Configure tab in the STMGT GUI and selects the appropriate archive server.**
  5. **The operator then selects Add Volume Group and enters in the volume group identifier and the path for the volume group.**
  6. **The operator then selects Backup from the pull down menu at the top of the STMGT GUI and selects Setup.**
  7. **The operator sets the site id to be the three character specification for the local site.**
  8. **The operator has to then go into the STMGT database and update the off-site table with the volume group name that was created to hold the data that needs to be backed up for off-site storage. (GUI doesn't cover this yet, see System Administrator for help).**
  9. **Add tape volumes to the volume group as needed using the *volgroup* command or, enable the space pool for that volume group with the *vgpool* command.**
    - For more information on using AMASS commands, see AMASS System Administrator's User Guide. The AMASS guide can be viewed using Adobe Acrobat and is available electronically on servers g0drg01 and g0drg02 in /usr/amass/books.

**Table 17.7-8. Create Local Back Up - Quick-Step Procedures**

Step	What to Enter or Select	Action to Take
1	<b>amass</b> or <b>root</b>	press <b>Return</b>
2	<b>mkdir /dss_stk1/vg22/local_backup/</b>	press <b>Return</b>
3	<b>setvolgrp path volumegroup</b>	press <b>Return</b>
4	<b>cp filename pathname</b>	press <b>Return</b>
5	<b>ADD volume group</b>	enter <b>volume group identifier</b>
6	<b>Select Backup/Setup</b>	
7	<b>Set id to be 3 character designation</b>	
8	<b>Update STMGT database backup table with volume group name</b>	
9	<b>Add tapes to volume group as needed</b>	<b>volgroup / vgpool</b>

### 17.7.3.3 Creating AMASS Off-Site Backup Tapes

ESDTs whose files have to be backed up should have the backup archive id and off-site id configured in SDSRV at installation time. Since cross DAAC transfer of data is not supported in the current delivery, the off-site id should be the same as the local site.

Using the output from section 17.7.3.1 as input, create the backup tapes using the following procedures. Table 17.7-9 presents the quick steps required to follow the procedure. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **At the UNIX prompt, type; amass or root and enter the password.**
  - Logs you into AMASS.
2. **The operator creates a new volume group in AMASS. Create the subdirectory (if not already created) by entering the following:**
  - a) `mkdir /dss_stk1/mode/offsite_backup/`
    - The directory above is only an example, actual directory structure is determined by the System Administrator.
  - b) **Press Return.**
3. **Create a volume group and associate it with the subdirectory just created by typing:**  
`setvolgrp path volumegroup`
  - Path is the full UNIX system path name of the directory whose directory tree is being assigned to the volume group.
  - Volumegroup is a number between 0 and 2047 assigned to the volumes by the volgroup command.
  - Ex. `setvolgrp /dss_stkn/modis/`
4. **The operator goes to the Configure tab in the STMGT GUI and selects the appropriate *archive server*.**
5. **The operator then selects Add Volume Group and enters in the volume group identifier and the path for the volume group.**
6. **The operator then selects Backup from the pull down menu at the top of the STMGT GUI and selects Setup.**
7. **The operator sets the off-site id to be the three character specification for the local site.**

8. The operator has to then go into the STMGT database and update the off-site table with the volume group name that was created to hold the data that needs to be backed up for off-site storage. (GUI doesn't cover this yet, see System Administrator for help).
9. Add tape volumes to the volume group as needed using the *volgroup* command or, enable the space pool for that volume group with the *vgpool* command.

**Table 17.7-9. Creating AMASS Off-Site Backup Tapes**

Step	What to Enter or Select	Action to Take
1	<b>amass</b> or <b>root</b>	press <b>Return</b>
2	<b>mkdir /dss_stk1/model/offsite_backup/</b>	press <b>Return</b>
3	<b>setvolgrp path volumegroup</b>	press <b>Return</b>
4	<b>Configure/Archive Server</b>	Select from STMGT GUI
5	<b>ADD volume group</b>	enter <b>volume group identifier</b>
6	<b>Select Backup/Setup</b>	
7	<b>Set id to be 3 character designation</b>	
8	<b>Update STMGT database off-site table with volume group name</b>	
9	<b>Add tapes to volume group as needed</b>	<b>volgroup / vgpool</b>

### 17.7.3.3.1 Close out AMASS Off-Site Backup Volume Group

Follow this procedure in the event that a different volume group is to be used for backup so that the original volume group can be exported. Table 17.7-10 presents the quick steps required to follow the procedure. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. The operator repeats steps 1 and 2 from the procedure above.
2. The operator selects **Modify Volume Group** and enters the logical volume group identifier for the off-site backup (may have to look up in the database)
3. The operator enters the **new path** created in step 1 for the new path for the volume group identifier.

4. The old volume group can now be exported using AMASS commands. Remove volume and send to distribution for shipment. Along with the AMASS backup tape, a metadata file is exported to the off-site facility using vgexport.
  - For more information on using AMASS commands, see AMASS System Administrator's User Guide. The AMASS guide can be viewed using Adobe Acrobat and is available electronically on servers g0drg01 and g0drg02 in /usr/amass/books.

**Table 17.7-10. Create Off-Site Back Up - Quick-Step Procedures**

Step	What to Enter or Select	Action to Take
1	<b>amass</b> or <b>root</b>	press <b>Return</b>
2	<b>mkdir /dss_stk1/vg22/local_backup/</b>	press <b>Return</b>
3	<b>setvolgrp path volumegroup</b>	press <b>Return</b>
4	<b>Select appropriate archive server from STMGU GUI</b>	
5	<b>Add volume group</b>	<b>enter group identifier and path</b>
6	<b>Select backup/setup</b>	
7	<b>Set off-site ID</b>	<b>Enter 3 characters for local site</b>
8	<b>Update off-site table with backup volume group</b>	
5	<b>Add volumes to group as needed</b>	<b>volgroup, vgpool</b>

## 17.8 Media Quality Control

The Archive Manager is responsible for the quality of data found in the archive. This encompasses not only getting quality data to the media, but also assuring this same data is available to users for a number of years.

Each archive manager will have to develop the media QC schedules and methods depending on the needs of each DAAC. Each DAAC has its own production loads and special needs. DAAC's with light loads can perform QC functions without impacting normal production timelines. DAAC's under heavy loads have to take this into consideration when scheduling QC functions.

The archive software provides command line instructions to access data such as; drive errors, databases that record when data is first recorded, when data is last retrieved, and number of times that data has been accessed by the users. Some AMASS commands which are useful for monitoring status and errors are: *amassreport*, *adf*, and *drivelist*. AMASS also provides scripts that can be run to view system logs such as *amass\_log* and *amass\_snap*. They can be used to ascertain if the data has problems or possibly degrading. For detailed information on these commands see *AMASS System Administrator's Guide*. The AMASS guide can be viewed using Adobe Acrobat and is available electronically on servers g0drg01 and g0drg02 in /usr/amass/books.

The D3 tape media is new to the market, but indications are that the data will have a shelf life of at least ten years. This means that the oldest data will have to be periodically tested from the storage area as well as the physical archive itself. The object is to find a comfort range of data storage limits before tapes have to be copied to other media.

If a tape resides off-line, the tape can be retrieved from storage and inserted into the archive to be copied to a volume group or copied to another media using an upcoming improvement to the *volcopy* command. This will have new tape to tape as well as disk to disk capabilities.

It is important to realize the difficulty in recovering data and take the care to handle cartridges properly. If a cartridge shows physical damage, it should be removed from the archive or storage and assessed for damage before using. Drive safety is of extreme importance in the evaluation of tape usage. Physical breakage, cracks or visible problems with the tape outer cartridge should be carefully assessed. Cartridges should be free of dust, dirt and moisture.

Damage to the physical tape; crinkles, scratches, tears, etc., are not a matter of ‘*how bad is it*’. Any of these warrant a tape not being loaded onto any drive. Damaged tape can wrap around of rollers and the heads causing considerable damage especially to the rotating heads of a drive. The following are instructions on handling of cartridges.

The Activity Checklist depicted in Table 17.7-1 provides an overview of the Graphical User Interface section. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

**Table 17.8-1. Media Quality Control - Activity Checklist**

<b>Order</b>	<b>Role</b>	<b>Task</b>	<b>Section</b>
1	DAM/DIT	Handling a Cartridge	(I) 17.8.1
2	DAM/DIT	Inspecting a Cartridge	(I) 17.8.2
3	DAM/DIT	Storing Environment for Cartridges	(I) 17.8.3
4	DAM/DIT	Operating Environment for Cartridges	(I) 17.8.4
5	DAM/DIT	Cleaning Cartridges	(P) 17.8.5

### **17.8.1 Handling a Cartridge**

The following instructions on handling a cartridge are to be observed in order to prevent cartridge tape damage:

- Make sure the leader block is latched every time you pick up a cartridge.
- Keep cartridges clean.
- Inspect a cartridge each time it is used and never put a damaged cartridge into a transport.

- Do not expose the tape or cartridge to direct sunlight or moisture.
- Do not expose a recorded cartridge to magnetic fields. Such exposure will destroy data on the tape.
- Do not release a leader block and pull tape from a cartridge unless you are repairing the leader.
- Do not handle tape that is outside the cartridge. The tape could be damaged.

### **17.8.2 Inspecting a Cartridge**

Before a cartridge is loaded into a transport, look for the following problems:

- Cracked or broken cartridge
- Liquid in the cartridge
- Dirty cartridge
- Broken leader block
- Broken leader block detent springs
- Damaged write-protect selector
- Gum label loose or extending over the cartridge edge

Cartridges need a stable environment in order to last their full expected life. Unstable environment conditions such as bad temperature control and or humidity problems can degrade tapes being stored. These conditions can affect the binding between the oxide and backing of the tape. This allows the oxide to flake off the backing and leave gaps in the oxide surface which wholes the actual data stored on tape.

Not only do you lose data but the flaking of oxide while running on a drive can effect the rollers control of tape motion. This can also lodge itself on spinning heads causing degraded read and write conditions. The following are basic rules for stabilizing the cartridge environment. These are standards found in the STK D3 Operators Guide.

### **17.8.3 Storing Environment for Cartridges**

When storing cartridges:

- Store cartridges in a clean environment. The preferred temperature for storage is 50C to 320C (400F to 900F) with a relative humidity of 40% to 60%.
- Keep cartridge tapes in the operating environment for at least 24 hours before you use them.
- Keep a cartridge tape in its protective wrapping until you are ready to use it.

## 17.8.4 Operating Environment for Cartridges

When using the cartridges, the recommended temperature range is 15°C to 27°C (59°F to 81°F) with a relative humidity of 30% to 60%.

Since the environment has a direct affect on the tape stability, following is a listing of the operational, storage, and device specific requirements found in Release B Environmental Control Plan for the ECS Project, 532-CD-002-001.

### Environment Restraints

Area / Device	Temperature	Humidity
Computer Room	41-113 F (5-45 C) degrees	20-80 %
Archive Room	59-77 F (15-25 C) degrees	30-70 %
D3 cartridge /operating	60-90 F (16-32 C) degrees	20-80%
D3 cartridge /storage	40-90 F (4-32 C) degrees	5-80 %
EMASS AML/2 range	60-90 F (16-32 C) degrees	15-80%
EMASS AML/2 recommended range	70-75 F (21-24 C) degrees	40-60 %
STK Powderhom	60-90 F (16-32 C) degrees	20-80 %
STK Redwood SD-3 drive	59-81 F (15-27 C) degrees	30-60 %

The QC function involves the operational duty of cleaning tape drives. Tape drives need regular cleaning to ensure the inserted and retrieved data to the archive is of good quality. Tapes are subject to problems inherited from dirty drives. Dirty drives can leave hazardous material on the loaded tape or damage the tape due to the slippage or sticking of roller surfaces. ACSLS software automatically cleans the drives when each reaches the set usage time which is tracked by the software. Cleaning tapes are kept on each archive for this purpose.

## 17.8.5 Cleaning Cartridges

The main cause of errors on tape is debris embedded in the tape and dirty drive heads. To reduce the chance of a tape becoming corrupted, the FSMS employs cleaning tapes to regularly clean the drive heads. Cleaning tapes are unknown to the AMASS database to prevent them from being used as data tapes. The STK Redwood SD3 helical scan tape drives are pre-set by STK to request a cleaning tape after 100 hours of head use. A cleaning tape has a set number of times it can be used before ACSLS will not use it anymore. The current value is set to 10. This value can be changed using the **set clean** command. There will be times when the operator wants to clean drives between this cycle. The ACSLS command **mount** allows the operator to load cleaning tapes to drives to perform this function. The following procedure lists the steps to clean a drive. If you need further information refer to the ACSLS System Administrator's Guide. Table 17.8-2 presents the steps required to follow the process. If you are already familiar with the procedure, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **Enter an ACSSA window on a SUN Workstation:**  
**Login as** *acssa* **and enter** *password*

- ACSSA mode entered and cmd\_proc window opened.
2. **Load a cleaning tape to the desired drive.**  
**Type:** mount *vol\_id drive\_id* where *vol\_id* is the volume id of the cleaning tape and *drive\_id* is the id of the drive to be cleaned.
    - The cleaning tape is loaded to the specified drive and the cleaning tape cleans the heads upon tape mount.
  3. **Dismount the tape from the drive.**  
**Type:** dismount *vol\_id drive\_id*
    - The tape is dismounted and placed in it's home slot.
  4. **Perform this step only if you want to change the number of times a cleaning tape can be used.** **Type:** set clean *max\_usage vol\_id* where *max\_usage* (e.g. 10) is the maximum number of uses for that volume and *vol\_id* is the volume id of that cleaning cartridge.

### Warning

Please note that the command line instruction ,*Volclean*, actually erases data from the tape and is not for the purposes stated in the above text.

Do not confuse the terms.

**Table 17.8-2. Cleaning Cartridges**

Step	What to Do	Action to Take
1	acssa	press <b>Enter</b>
2	<b>mount <i>vol_id drive_id</i></b>	press <b>Enter</b>
3	dismount <i>vol_id drive_id</i>	press <b>Enter</b>
4	<b>set clean <i>max_usage vol_id</i></b>	press <b>Enter</b>

## 17.9 Archive Data Restoration after Failure

This section deals with the permanent restoration of Archive data primary copy where it has been otherwise permanently lost or corrupted. It does not deal with the real-time use of backup data, where it exists, to satisfy Read requests for which the Read of the primary file has failed. That process happens automatically and is covered in section 17.7.

Whilst the Archive hardware is highly reliable errors e.g. due to tape or drive failure must be expected to occur albeit at an extremely low rate as a function of the archived data volume. Where errors have occurred and data has been lost from the archive and can not be restored from backup there may exist the potential to recover and re-archive equivalent data by one of the following means:

copying from backup onto the original or a new primary,  
 replacing damaged or corrupted volumes with vendor restored or backup volumes,  
 re-generation by reprocessing,  
 obtaining replacement data from the original external provider.

This section defines the procedures to follow for such data recovery. Details of technical actions are presented in the enclosed or referenced sub-procedures. This section does not deal with restoring the AMASS system database which is described in section 17.7.1.3.

The procedure described can be performed for a single file, or for multiple files. It is expected that for a single or small number of files the files to restore will be the result of failed file Read requests for which the entry point to these procedures is section 17.9.2.2. Recovery of large numbers of files may be required, for example, after failure of an entire tape. For this the procedure starting point is 17.9.2.1.

The Activity Checklist depicted in Table 17.9-1 provides an overview of archive data restoration. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure or Instruction section number where details for performing the task can be found.

**Table 17.9-1. Archive Data Recovery/Restoration - Activity Checklist**

Order	Role	Task	Section
1	DAM	Manual Data Recovery from Damaged Cartridge	17.9.5
2	DAM/SA	Manual Data Recovery from Local Backup Tapes	17.9.4.1
3	DAM/SA	Manual Data Recovery from Off-Site Backup Tapes	17.9.4.2
4	DAM/DIT	Data Re-Generation or Re-Supply	17.9.2.3

### 17.9.1 Data Recovery Process Overview

For the specific procedure steps for data recovery see section 17.9.2. This section should be used as a guide and overview of the process only.

Data re-generation and re-ingestion are not purely Archive internal activities and hence this process involves other ECS sub-systems, namely the SDSRV and PDPS as well as STMGT. The storage device vendor, (Storage Technologies Inc., known as Storage Tek or STK) , is also involved.

Storage Tek offer a service to recover remaining good blocks on tapes which have started to fail. Use of this service is the first step to recover entire tapes.

Storage Management (STMGT) is the point of failure detection in the event of data loss from the ECS archive. STMGT, as part of DSS, deals with data only as named files.

Science Data Server (SDSRV) manages the ECS metadata inventory. The inventory database relates archive files with the ECS data "granules" of which they are part. ECS sub-systems other than DSS manage data in terms of granules and hence must manage data loss and replacement likewise. SDSRV is used, within this process, to serve STMGT with archive 'volume IDs' and file checksums and to serve PDPS, with metadata defining the granules related to lost files.

The Planning and Data Production System (PDPS) manages production within the DAAC. PDPS plans and runs PGEs as DPRs (Data Processing Requests) the outputs of which are new granules which are stored in the archive. Where lost archive files were from granules generated within the local DAAC PDPS may be able to re-generate them by repeating the appropriate DPRs,

For the purposes of overview only the following define the major tasks of each ECS sub-system in recovery of lost archive data.

#### Archive (STMGT):

1. Detect the failure, i.e. of a drive or tape.
2. Optionally attempt to recover files still readable from the effected tape(s), e.g. up to the point of physical failure.
3. Interface to SDSRV to determine location and checksum metadata for files effected by a failure (using the "Effected File List").
4. Interface to Storage Tek for recovery of files on the tape where possible by application of their (Storage Tek's) in-house procedures.
5. Verify correctness of files thus recovered using checksums.
6. Recover additional files from local and remote tape backups where applicable.
7. Pass to second SDSRV procedure list of residual files lost and not recovered (using the "Lost File List").

#### Archive (SDSRV):

1. Service STMGT requests for file details for recovery from backup and post file recovery verification (SDSRV sub-procedure "SDSRV Retrieval of File Location metadata for STMGT").
2. Determine list of Granules effected by otherwise permanent file loss, from "Lost File List".
3. Determine Granules which can potentially be replaced by re-generation by PDPS based on retrieving a valid local Production History (PH) file UR for the Granule.
4. Retrieve metadata for such granules required by PDPS, including PH UR, and pass to PDPS (using the list "Granules for PDPS Re-Generation").
5. Return list of remaining granules effected by file loss to the calling procedure ("Residual Granules to Recover").

PDPS (PLS):

Search for and then Acquire from SDSRV the actual PH granules (tar files) related to the granules to be re-generated.

Extract from those PCFs the parameters of the lost granules production and create corresponding new Production Requests (PRs) for granule re-generation using them.

Verify that resulting PRs can and should be run (e.g. version of lost data justifies regeneration; applicable version of PGE is 'qualified' for operational version of ECS etc.).

Insert resulting PRs into production plan sequenced as necessary (e.g. regeneration of lost granule 'B' may be dependent on earlier regeneration of lost granule 'A').

Activation of the resulting plan then leads via the normal PLS/DPS production process to granule regeneration and insertion.

Return list of any granules not re-generatable by this instance of PDPS to the calling procedure (as "PDPS Residual Granules").

## **17.9.2 Data Recovery Process**

For an overview of the procedures referenced from this section and their interfaces see Section 17.9.1. The entry point to these procedures is usually from the analysis of Read errors in Section 17.6.6.

### **17.9..2.1 Data Recovery Procedure for an Entire Tape**

This procedure is to be utilized when an entire tape has been damaged or corrupted such that it has had to be removed from the Archive and can not be re-inserted 'as-is'. The aim of the procedure is to recover or regenerate as much of the tape's contents as possible.

Note that at this point specific failed Read requests against files on the tape which have backups will have been satisfied by the read of the backup data. This procedure therefore has only to be concerned with *permanently recovering* the primary copy of such backed up data, not with satisfying pending Read requests.

1. Execute the Archive (STMGT) procedure for Manual Data Recovery from Damaged Tape in section 17.9.5. That procedure includes use of the SDSRV procedure for "Retrieval of File Location Metadata" (17.9.6.1), the Storage Tek tape recovery procedure and optionally an attempt to directly recover data from the beginning of the failed tape to the point of first failure.
2. As output of the above step the operator must have the following information and should use it as input to the "Data Recovery Procedure for Known Files" 17.9.2.2:
  - the output of the SDSRV "Retrieval of File Location Metadata" procedure (17.9.6.1) which will contain a list of all files originally on the failed tape, their Archive IDs (primary and backup and off-site if applicable) and,

- a list of those files remaining to be recovered i.e. which were *not* successfully recovered within the scope of step 1. (e.g. which did not pass checksum verification on the tape returned by Storage Tek).

### **17.9.2.2 Data Recovery Procedure for Known Files**

This procedure can be executed for residual files not recovered within the “Data Recovery Procedure for an Entire Tape”, 17.9.2.1, or for any other individual or set of known files which need to be recovered.

As part of the input to this process the Operator needs the following information for each file to be recovered:

the file “Archive unique filename”,

ArchiveIDs i.e. primary plus local and off-site backup ArchiveIDs if valid,

file checksum.

The above data are either supplied by the preceding process or can be generated for a list of files using the SDSRV procedure “Retrieval of File Location Metadata” (17.9.6.1).

For all files for which a backup exists, as indicated by the backup Archive IDs, the procedures (local and off-site) for “Manual Data Recovery from Backup”, 17.9.4 should be attempted.

Files thus recovered should be removed from the list of remaining files. For remaining files re-generation of the effected Granules can now be attempted. This is achieved by the following steps.

Using the list of remaining files as input execute the SDSRV procedure “SDSRV Retrieval of Granule Production History Metadata” in section 17.9.6.2. This will output a file of metadata related to the specified *files* which is needed by PLS to re-generate the equivalent *granules*.

Pass the output of the above step to the PDPS/PLS process to “Re-Generate Granules Effected by Loss of Files from the Archive” in section 13.1.6 of this document. That procedure will result in the generation of new Production Requests to replace locally generated granules.

The PDPS/PLS procedure will also generate a list of “PDPS Residual Granules”. The SDSRV procedures may also return Granules with no known Production History. All these are Granules, related to the lost files, which cannot be recovered within the above procedure steps. They should be input to the procedure following for “Recovery of Granules from other sources”.

### **17.9.2.3 Recovery of Granules from other sources**

Residual Granules from the procedure for “Data Recovery Procedure for Known Files”, 17.9.2.2, represent granules not recovered by the above described procedures. These should fall into the following classes:

- data to re-ingest,

- granules remotely inserted/acquired from another DAAC,
- granules for which re-generation has been deemed unnecessary, and
- errors in the recovery process.

The residual granule lists should be concatenated and passed in turn through the following sub-procedures.

#### **17.9.2.3.1 Sub-procedure: Data to Re-Ingest**

1. Based on ESDT ShortName INS or Archive Operators must select from the list those lost granules which were input into this DAAC via the INS.
2. The resulting list of Ingested Granules should be sub-divided by data source.
3. With reference to the applicable ICD and using the Granule metadata from the list (as generated by SDSRV or PDPS) the required data re-supply requests should be initiated as per the ICD defined re-supply process for those data suppliers able to re-supply data.
4. Note that some data suppliers, e.g. Landsat-7 have decided not to support such re-supply of data.

#### **17.9.2.3.2 Remotely Inserted Granules**

Remote Insert of granules is a special case for Granule recovery because they have been Archived at a DAAC other than the producing DAAC and (generally) not archived at the producing DAAC. Note that Remote Insert of granules is not supported in the applicable versions of ECS (Drop 4). However the following procedure should serve to recover them when applicable:

1. The procedure is as for locally produced granules up to this point, i.e. the non-locally produced granules will be identified in the output of the SDSRV procedure (“SDSRV Retrieval of Granule Production History Metadata”) as known to the local SDSRV but without an associated PH granule.
2. Divide the residual granules list by ESDT ShortName and identify those granules which are remotely Inserted i.e. supplied to this DAAC by other DAACs.
3. By source DAAC forward the granule metadata lists to the source DAAC.
4. At the source DAAC this list should be used as input to the PDPS/PLS procedure (“Re-Generate Granules Effected by Loss of Files from the Archive” in section 13.1.6). This is necessary because currently for remotely Inserted granules the PH granule will be inserted at the producing DAAC only and not at the Archive DAAC.
5. As a result the lost granule itself will not be found by the QA monitor search (within the PLS procedure) at the producing DAAC. To find the PH granule the operator must instead search on the short-name of another granule created by the generating PGE. Once the PH granule has been thus found the PLS process can continue to granule re-generation without variation.

**Note that for remotely  
Acquired granules  
there is no issue of  
Archive recovery as  
these are granules  
Archived only at their  
producing DAAC but  
Acquired, as required,  
by processing at other  
DAACs.**

### **17.9.2.3.3 Permanently Lost Data and Errors**

Remaining granules effected by the archive tape failure and not recovered by one of the above means will fall into one of the following categories:

- lost files which have, by design, been deleted from the SDSRV databases during this recovery procedure,
- granules the re-generation of which was determined not to be necessary within the PDPS procedure,
- Ingested granules which were not included in Archive backup or re-deliverable by the supplier (e.g. Landsat Level 0 data),
- an error either in the recovery processes, actions or in system configuration e.g. in the configuration of backups.

As an example in this final category the outputs of SSI&T should always be included amongst those files configured for automatic backup within the Archive. Where this is not the case and the primary copies are effected by Archive failure re-SSI&T of the effected PGEs will be required.

In addition it is essential that granules which are necessary inputs to the recovery process itself, e.g. the Production History (PH) as input to PLS re-generation, must be assigned to backed up volume groups. If PH granules are lost and not backed up then the science granules to which they correspond will not be re-generatable by PDPS.

Compound failure of the archive backups may also result in a permanent data loss.

### **17.9.3 Results of File and Granule Recovery**

The result of file or granule recovery are slightly different depending on whether the lost file was recovered, e.g. from backup, or the corresponding lost granule had to be re-Archived, e.g. after re-generation by PDPS.

Files which are recovered within the Archive/STMGT procedures are re-archived under the same name such that the effected granule(s) are restored as per before the failure.

Where file recovery within STMGT control is not possible the resulting Granule recovery, e.g by PDPS re-generation or via-INS re-ingestion, results in the insertion of a new granule. This new granule will have a new UR and a new 'Production Date and Time'. Particularly where granule re-generation is required, i.e. by PDPS, exact re-production of the original granule (data byte-for-byte) is not guaranteed.

#### **17.9.4 Manual Use of Backup Data for Recovery**

The following procedures present the steps required for manual use of local or off-site backup data for recovery. These procedures assume the backup data is available on tape.

##### **17.9.4.1 Manual Data Recovery from Local Backup Tapes**

The following procedure presents the steps required for manual data recovery from local backup tapes. This procedure assumes the tape is on-line and in the Powderhorn LSM. Volume groups and tapes are transparent to the automated file and storage management system. As long as the AMASS database is aware of the files, the operator moves data using standard UNIX commands. Table 17.9-2 presents the steps required to follow the process. If you are already familiar with the procedure, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1. The operator goes to the STMGT GUI and uses the Configure tab.**
- The operator chooses the **Archive Server** that is associated with the **ServerKey** portion of the **Archive ID**. Example: EcDsStArchiveServerDRP1
- The operator selects **View Volume Groups**.
- The operator clicks on the volume group **identifiers** that are specified for primary and secondary storage in the archive.
- Once the operator knows the location of the backup file and the location of the primary file, he/she can issue a copy command (or dd) from the Unix command line to copy the file from the backup version of the file to the primary version.
- If this recovery is one of a set of files to be restored, e.g. because they were lost from a damaged tape, files recovered from backup should be removed from the list of files to be recovered by other means.

**Table 17.9-2. Manual Data Recovery from Local Backup Tapes**

Step	What to Do	Action to Take
1	Configure	Select from STMGT GUI
2	<b>Archive Server</b>	Select from STMGT GUI
3	<b>View Volume Groups</b>	Select from STMGT GUI
4	<b>identifiers</b>	Select from STMGT GUI
5	<b>Copy file to primary</b>	<code>cp path path</code>

#### 17.9.4.2 Manual Data Recovery from Off-Site Backup Tapes

The following presents the steps required for manual data recovery from off-site backup. Initially, GDAAC off-site backup tapes will be stored at Goddard in another building. If in the future, backup data is sent to Langley, this document will be updated to reflect that procedure. Table 17.9-3 presents the steps required to follow the data recovery process. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

To determine whether or not the file exists in the tape library:

1. The operator runs the AMASS fileprint command giving as input the filename and pathname into AMASS cache.

**fileprint** <filepathname>.

2. The output from fileprint will be a structure of information displayed on the terminal. The operator needs to check on the volume id. There may be two ids, in which case the file is split over volumes.
3. The operator issues an AMASS vollist command giving the volume id as input.

**vollist** <volumenumber>

- If the volume is active and in a juke box (as displayed in the output from the vollist command), then the operator can move the file to the primary and secondary archive locations by following the same process as in the operations concept for restoring the file from the local backup (essentially this is a case where there are two local backups).
  - If the volume is inactive and not in a juke box (as displayed in the output from the vollist command), then the operator will have to request the tape(s) from the off-site storage.
4. After requesting and receiving the required data from off-site backup, mount the tape and bring it on-line.
    - a) **Insert the tape following procedures in section 17.10.1 STK Media Interface.**
      - The AMASS database will have a record of the data.

5. Using an appropriate UNIX command, copy the file(s) from the off-site backup tape(s) to the correct archive directory.
6. If this recovery is one of a set of files to be restored, e.g. because they were lost from a damaged tape, files recovered from backup should be removed from the list of files to be recovered by other means

**Table 17.9-3. Manual Data Recovery from Off-Site Backup Tapes**

Step	What to Do	Action to Take
1	<b>fileprint &lt;filepathname&gt;</b> .	press <b>Return</b>
2	Check volume id	Review fileprint
3	<b>vollist &lt;volumenumber&gt;</b>	press <b>Return</b>
4	Mount tape	Procedure 17.9.1
5	Copy file(s) to primary directory	<code>cp path path</code>

### 17.9.5 Manual Data Recovery From Damaged Cartridge

Manual recovery of AMASS generated data from the D3 cartridge will be necessary in the event that a tape volume becomes damaged. In the course of operations it is possible for a tape to become physically damaged or accidentally overwritten. Some indications of a damaged tape are AMASS read/write errors, or AMASS may determine the volume is unreadable and mark it inactive. In that event, a manual recovery of AMASS generated data from the STK Redwood (D3) cartridge must be attempted.

Due to the technical complexity of the D3 tape recovery, it will be performed by STK personnel. A listing of all the files on tape and the associated start block numbers must be generated and provided to the recovery personnel in order to proceed with the recovery. The archive operator needs to invoke a *perl5* utility script and respond to the scripted prompts. The utility will generate three ASCII files, that must be provided to the STK recovery personnel along with the damaged tape. The files are: *filelist\_volnumber*, *start\_block\_listing\_volnumber*, and *README\_volnumber*, where *volnumber* is the volume number of the requested tape volume.

The script utility, **DsStFilesPerVolume**, is located in the utilities directory. The script will initially output directory information followed by three files.

Example directory information output:

```
/data1/data/:BR:Browse.001:1170:1.BINARY
/data1/data/:BR:Browse.000:1170:1.BINARY
/data1/data/:SC:MOD00:65001:1.CCSDS
/data1/data/:SC:MOD00:65002:1.CCSDS
/data1/data/:SC:MOD00:20001:1.CCSDS
```

```
/data1/data/:PH:PH.001:2000000076:1.BINARY
/data1/data/:PH:PH.000:2000000076:1.BINARY
/data1/data/:QA:QA.001:1003:1.ASCII
/data1/data/:QA:QA.001:1004:1.ASCII
/data1/data/:QA:QA.001:1005:1.ASCII
/data1/data/:OR:OR.001:2100:1.ASCII
/data1/data/:OR:OR.001:2101:1.ASCII
/data1/data/:OR:OR.001:2102:1.ASCII
/data1/data/:OR:OR.001:2103:1.ASCII
/data1/data/:AN:AN.001:3100:1.ASCII
/data1/data/:AN:AN.001:3101:1.ASCII
/data1/data/:AN:AN.001:3102:1.ASCII
/data1/data/:AN:AN.001:3103:1.ASCII
```

The three files produced by DsStFilesPerVolume are as follows:

A readme file (README\_TAPE\_RECOVERY)

A list of all files on the tape (filelist\_v#)

A list of file starting blocks on the tape (start\_block\_listing\_v#)

Where ‘#’ stands for the AMASS designated volume number being recovered. The ‘filelist\_v#’ file output is in the form of one file name per line e.g.

```
/dss_stk2/joel/TestStdSeq6_0_10.wrt
/dss_stk2/joel/TestStdSeq6_0_10.wrt
/dss_stk2/joel/TestStdSeq6_0_10.wrt
/dss_stk2/joel/TestStdSeq6_0_10.wrt
/dss_stk2/joel/TestStdSeq6_0_10.wrt
```

If you are new to the system, you should use the following detailed procedure. If you are familiar with the system, you may prefer to use the quick-step table 17.9-4.

1. **Login as amass or root and enter the *password***
2. **Verify AMASS is running using the *amassstat* command.**
3. **Run *vollist* and *grep* for the volume label in order to get the volume id.**  
*vollist|grep SG0003*
4. **Remove the volume from the library using the *voloutlet* command.**  
*voloutlet volumenumber*
  - AMASS will move volume to the Cartridge Access Port (CAP) and mark it offline.
5. **The DAM will inspect the physical cartridge and tape for damage, see section 17.7.4.2 Inspecting a Cartridge. Any creasing, scratches, snapping, or stretching of the tape may warrant keeping the volume offline and sending it STK for replacement.**

6. **If the DAM determines that the tape is damaged, it is shipped to STK for recovery along the three files generated by the DsStFilesPerVolume utility script. In order to run the script you must be logged in as amass or root.**
  - a) **To start the perl utility script, enter:**  
`/usr/ecs/mode/CUSTOM/utilities/DsStFilesPerVolume`
    - You will be prompted to enter the AMASS volume number for which you wish to generate listings.
  - a) **Enter the volume number of the AMASS volume.**
    - A message will display informing you when the listings are complete.
  - b) (optional) If the tape is damaged towards the end of the tape, it will be possible to copy files from the tape using the `start_block_listing_v(nn)` file generated above. The file to be copied must first be renamed using the Unix `mv` command and the copied to the original filename ( `mv a b; cp b a`). It is important that the file remain within the volume group. Care must be taken while doing this procedure. Reading from the part of tape which contains the damaged area may cause damage to the drives. Recovering data in this manner will limit the amount of regeneration of data that may need to be performed. The list of files that are recovered should be kept so that further attempts to regenerate them will not be started. A copy of the list of files that need to be recovered should be kept as well so that any files which fail to be retrieved can be checked against the list first before investigation commences.
7. **Send the volume to STK along with the files generated by the perl utility.**
  - STK will copy all uncorrupted data to a new tape and insert filler data blocks to replace the lost data.
  - The filler data is inserted using the original block sequence so that the remaining data can be accessed by AMASS.
  - After the data has been copied to a new cartridge, it is shipped back to the DAAC archive with the original volume label and a report indicating which data blocks were replaced with filler data.
8. **After receiving the recovered tape back from STK, load the tape into the library using the bulkinlet command:**  
`bulkinlet volgroupnumber`
  - AMASS will read the volume label and place the volume in it's home slot.
9. **Put the volume online using the volloc command**  
`volloc -n volumenumber`

10. **Make the volume active using the *volstat* command**  
*volstat -a volumenumber*
11. **Using the report provided by STK, determine which files have had data blocks replaced and delete those files from the database using standard UNIX commands. All such files must be recorded on a list of non-recovered files.**  
*rm filepathname*
12. **If the DAM determines that the amount of dead space created on the tape exceeds the allowed threshold, the files can be copied to another volume within the volume group and the tape can be reformatted. See Recycle a Volume in the *AMASS System Administrator's User Guide*. The *AMASS* guide can be viewed using Adobe Acrobat and is available electronically on servers *g0drg01* and *g0drg02* in */usr/amass/books*.**
13. **Once the tape has been returned from STK, the list of files that are on the tape (i.e. the file 'filelist\_v#' described above) must be used as input to the SDSRV procedure for "Retrieval of File Location Metadata", as specified in section 17.9.6.1, to recover the ArchiveIDs and checksum for each file.**
14. **These checksums, and other STK output if available, are then used to validate the files on the returned tape. All files which fail these tests must be deleted as described in point 11, above. They must also be added to the list of non-recovered files.**
  - **For files with a non-zero checksum returned by SDSRV the checksum of the recovered file must be validated with the Unix command 'cksum' i.e.**  
*cksum filepathnam*  
**This command returns one line with three parameters per input file. The file checksum is the first column. For all files where the returned checksum does not match the SDSRV generated checksum the file has failed the checksum test and must be deleted.**
  - **For remaining files, for which the SDSRV returns a checksum of zero, the checksum can not be use to verify validity of the file on the returned tape. If STK have supplied information detailing the corrupt blocks on the tape then that may be used with the data in the "start\_block\_listing\_v#" file to determine which of the files have been corrupted and the remaining files recovered. Alternatively all zero checksum files should be assumed to be corrupted and not recovered, i.e. they must be deleted.**
15. **The list of non-recovered files then serves as input to subsequent file recovery by other means, i.e. as specified in section 17.9.2.2.**

**Table 17.9-4. D3 Cartridge Data Recovery - Quick-Step Procedures**

Step	What to Enter or Select	Action Taken
1	<b>amass</b> or <b>root</b>	press <b>Return</b>
2	<b>amasssstat</b>	press <b>Return</b>
3	<b>vollist grep SG0003</b>	press <b>Return</b>
4	<b>voloutlet volumenumber</b>	proceed to step 5
5	Check for Physical tape damage	Tape Damage ? Y- run DsStFilesPerVolume script N- Enter cartridge into archive
6	ship to STK with files	
7	<b>bulkinlet volgroupnumber</b>	press <b>Return</b>
8	<b>volloc -n volumenumber</b>	press <b>Return</b>
9	<b>volstat -a volumenumber</b>	press <b>Return</b>
10	<b>rm filepathname</b>	proceed to step 5
11	Run SDSRV procedure	
12	Send retrieve request to SDSRV	

### 17.9.6 SDSRV Procedures in Support of Data Recovery

This section details steps in the recovery of lost archive data which must be executed against the SDSRV database. It contains two procedures. The first returns file metadata including file checksums to the Archive/STMGT operator for use with file recovery from tapes. The second generates granule metadata for use by the Planning sub-system, PLS, in re-creating granules from which files have been irrecoverably lost.

The “lists” which form the interfaces between these procedures should be exchanged as electronic files e.g. as email ‘attachments’ or by copying.

These operations procedures are valid for ECS Release B drop 4PL7 and subsequent 4Pn drops. They should be used in conjunction with the related Archive/STMGT procedures (17.9.5) and overview procedure (17.9.2.1, 17.9.2.2).

#### 17.9.6.1 SDSRV Retrieval of File Location Metadata

For information on the context of this procedures and its interfaces see section 17.9.1. The usual entry point to this process is the Archive/STMGT procedure for “Manual Data Recovery from Damaged Cartridge” (section 17.9.5). It returns its output to its calling procedure.

The input to this procedure is a list of the unique file names of files in the Archive effected by a tape failure e.g. as generated within procedure 17.9.5 by the script DsStFilesPerVolume. The list is called the “Effected File List” and is referred to below as the EFL. The example file name used for it is “eflfile.txt”. The file names in the EFL will match the DsMdFileStorage.internalFileName column within the SDSRV metadata database.

The output from this procedure is a list of file metadata (archiveIDs and checksum) for each file named in the input. It is called the “Effected File Metadata” list and is referred to below as the EFM. The example file name used for it is “eflmetadata.txt”. It is used to determine the backup locations, if any, of lost files and to verify the checksum of files restored via tape drive vendor (StorageTek) support.

This procedure has the following dependencies:

- The operator is working on a machine from which SQL connections can be made to the SDSRV SQL server, e.g. ‘t1acg0’ and that server recognizes the sybase account EcDsScienceDataServer.
- The Unix account in use has execute permission on the required scripts, the ‘path’ shell variable set to include a directory where the command ‘isql’ is located and the SYBASE (Sybase ‘home’) environment variable set appropriately (e.g. setenv SYBASE /tools/sybOCv11.1.0).
- The operator knows the password for the SDSRV Sybase user EcDsScienceDataServer

Procedure:

1. Receive the Effected File List (EFL) generated by the procedure e.g. as generated by the utility DsStFilesPerVolume (see section 17.9.5) as an electronic file. Save a local copy of the file with the name ‘eflfile.txt’ or similar.
2. Execute the shell script DsDbSrFileLocMetadata at the Unix prompt against this file as follows:  
*DsDbSrFileLocMetadata eflfile.txt eflmetadata.txt*
3. At the prompt enter the Sybase password for the Sybase account EcDsScienceDataServer.

For each of the “internalFileNames” in the input “Effected File List” the script retrieves from the SDSRV database the file primary archive ID and checksum and the backup and offsite archive IDs if they are set.

4. Check that the output file is not empty (i.e. of zero length) using the ‘ls’ command. If the file is of zero length either the input file was of zero length or an unexplained error occurred.

**ls -l eflmetadata.txt**

5. Visually inspect the file to verify success of the command (using e.g. ‘more’). The output file will be in two sections. First the Effected File metadata found within SDSRV Inventory database. Lines in this section appear as follows:

InternalFileName\_found\_in\_SDSRV\_Inventory\_Metadata\_Database Tue Jan 5 18:26:07 EST 1999

:BR:Browse.001:1170:1.BINARY

DRP1\_TS3:VG1 NOT\_SUPPLIED NOT\_SUPPLIED "NONE" 0 1000 BRBrowse.0011170

:SC:MOD00:65001:1.CCSDS

DRP1\_TS3:VG1 NOT\_SUPPLIED NOT\_SUPPLIED

"Oct 10 1996 12:02:00:000AM" 0 1000 SCAST\_04.00120001

:PH:PH.001:2000000076:1.BINARY

DRP1\_TS3:VG1 NOT\_SUPPLIED NOT\_SUPPLIED "NONE" 0 65536 PHPH.001200000076

:QA:QA.001:1003:1.ASCII

SGI\_RCCLAB1DEV:VG1 NULL NotSupported "NONE" 0 0 QAQA.0011003

:OR:OR.001:2100:1.ASCII

RECOV\_TEST:VG1 NOT\_SUPPLIED NOT\_SUPPLIED "NONE" 0 0 OROR.0012100

:AN:AN.001:3100:1.ASCII

RECOV\_TEST:VG1 NOT\_SUPPLIED NOT\_SUPPLIED "NONE" 0 0 ANAN.0013100

Second files not found within SDSRV. This section will usually be empty.

6. It is advisable to check for errors in the output of the script using the Unix 'grep' command. This is done by searching the output for occurrences of the strings 'msg' and 'error'. To do this execute the following at the Unix prompt:

```
grep -i msg eflmetadata.tx | wc -l
```

```
grep -i error eflmetadata.tx | wc -l
```

If no errors occurred these commands will both output '0' (zero). Any other output means there were errors in the process. If errors are found they must be diagnosed based on the error message(s) and the procedure repeated after correction of the input file.

7. When the output file passes the above tests it should be passed back to the calling procedure.

### **17.9.6.2 SDSRV Retrieval of Granule Production History Metadata**

For information on the context of this procedures and its interfaces see section 17.9.1. The entry point to this process is the Archive/STMGT procedure for "Data Recovery Procedure for Known Files" (section 17.9.2.2). Its input is a list of files remaining to be recovered, referred to below as the "Lost File List" (LFL). Its output serves as input to the PDPS/PLS procedure for granule regeneration, "Re-Generate Granules Effected by Loss of Files from the Archive", in Section 13.1.6.

Note this procedure assumes that:

- the Algorithm Package information has been inserted into the SDSRV for all associate datatypes. This is populated by SSI&T processing. There may be a period of time in the “granules” lifetime when this information is not populated. Attributes PGENAME and PGEVersion are affected

The goal of this procedure is to list PLS required granule metadata for those granules which the local PDPS should be able to re-generate. This decision is based on finding valid Production History URs for the ‘lost’ granules in the local SDSRV database.

Output from this procedure is a file containing:

- “Granules for PDPS Re-generation” - those found within SDSRV. These are passed to the PLS operators for re-generation using the procedure “Re-Generate Granules Effected by Loss of Files from the Archive” (section 13.1.6).
- “Residual Granules to Recover” - those not found within SDSRV inventory. This is passed back to the top-level procedure. This may include granules that have been removed by the “Physical Delete” service within SDSRV.

Procedure:

1. Receive the “Lost File List” (LFL) e.g. as generated by the procedure in section 17.9.5, as an electronic file. Save a local copy of the file with the name ‘lflfile.txt’ or similar.

Execute the shell script DsDbSrFileLocMetadata at the Unix prompt against this file as follows:

**DsDbSrGranPHMetadata *lflfile.txt lgrmetadata.txt***

2. At the prompt enter the Sybase password for the Sybase account EcDsScienceDataServer.

The output file will be divided into two sections:

- Granule metadata found within SDSRV Inventory database for use with e.g. PDPS granule re-generation.
- Residual files to recover. Those files not found within SDSRV.

For each of the “internalFileNames” in the input “Lost File List” for which related Granule metadata is found in this SDSRV the script retrieves the following pertaining to the Granule of which that file was part:

- the “GeoID” (partial UR),
- the UR of its associated Production History granule, if available,

- the ESDT shortname and versionID,
- the granule beginning date and time and ending date and time.

1. Verify that the metadata extraction was successful by applying to the output file (lgrmetadata.txt) the tests as specified in steps 4, 5 and 6 of section 17.9.4.1, above. Lines in this section appear as follows:

Granule\_metadata\_found\_within\_SDSRV\_Inventory\_database Tue Jan 5 18:26:53 EST 1999

```
:BR:Browse.001:1170:1.BINARY
0 1000 BRBrowse.0011170 PGEName 1      "None" "None" "NONE" "NORMAL"
PH_Does_Not_Apply
```

```
:SC:MOD00:65001:1.CCSDS
0 1000 SCAST_04.00120001 PGEName 1
"Jan 1 1997 12:00:00:000AM" "Jan 1 1997 12:00:00:000AM" "Oct 10 1996 12:02:00:000AM"
"NORMAL" 2
NO_PH
```

```
:PH:PH.001:2000000076:1.BINARY
0 65536 PHPH.0012000000076 PGEName 1      "None" "None" "None" "NORMAL"
PH_Does_Not_Apply
```

```
:QA:QA.001:1003:1.ASCII
0 0 QAQA.0011003 PGEName 1      "None" "None" "None" "NORMAL"
PH_Does_Not_Apply
```

```
:OR:OR.001:2102:1.ASCII
0 0 OROR.0012102 PGEName 1      "None" "None" "None" "NORMAL"
PH_Does_Not_Apply
```

```
:AN:AN.001:3100:1.ASCII
0 0 ANAN.0013100 PGEName 1      "None" "None" "None" "NORMAL"
PH_Does_Not_Apply
```

Granule\_metadata\_not\_found\_within\_SDSRV\_Inventory\_database Tue Jan 5 18:26:53 EST 1999

2. When the output file passes the above tests it should be passed back to the calling procedure.

Note:

- For the at-launch system (Drop 4P\*), granule metadata for recovered files will produce “logical duplicate” metadata, one set for the original “lost” files and another for the “re-generated” files.
- Granules for recovered files will by definition have a different granuleUR (dbID).

## 17.10 Operations of Archive Media Interfaces

Operations of archive media interfaces involves the insertion and removal of archive media cartridges, tapes, or optical disk. Archive media insertion and removal from the library is an automated or manual function. The method used is dependent upon the amount of media involved. Large amounts of media is loaded or unloaded manually. Small amounts are handled automatically. Archive media is added or removed via the Cartridge Access Port (CAP) on the STK, the EMASS Entry Interface Facility (EIF), or the EMASS I/O Unit depending on the model used.

The term manual loading can have one of two meanings. The first is the loading of cartridges directly into the archive storage slots. The second is the loading of media into the CAP, EIF or I/O Unit and commanding the robotic units through the EIF keypad or operator terminal to insert the tapes into the archive.

The STK CAP and EMASS EIF or I/O Units also have fully automatic operational function. These functions allow an operator to set an operational mode that inserts media into the archive after loading and closing of the CAP, EIF, or I/O. In this mode, the system inserts without operator intervention.

The Activity Checklist depicted in Table 17.10-1 provides an overview of the operations of the archive media interfaces. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

**Table 17.10-1. Operations of Archive Media Interfaces - Activity Checklist  
(1 of 2)**

Order	Role	Task	Section
1	DIT	STK Media Interface	(I) 17.10.1
2	DIT	Manual Insertion of STK Media	(I) 17.10.1.1
3	DIT	Insertion of STK Media Using Bulkload	(P) 17.10.1.1.1
4	DIT	Insertion of STK Media Using Bulkinlet	(P) 17.10.1.1.2
5	DIT	Automatic Insertion of STK Media	(P) 17.10.1.2
6	DIT	Manual Ejection of STK Media	(I) 17.10.1.3
7	DIT	Commanding Ejection of STK Media	(P) 17.10.1.3.1
8	DIT	Manually Removing STK Media from the Powderhorn Library Storage Module (LSM)	(P) 17.10.1.3.2
9	DIT	EMASS Media Interface Units	(I) 17.10.2
10	DIT	Inserting Media into the EMASS EIF	(P) 17.10.2.1
11	DIT	Automatically Loading EMASS Archive Media	(P) 17.10.2.2
12	DIT	Manually Loading EMASS Archive Media	(P) 17.10.2.3
13	DIT	Ejecting EMASS Archive Media Using AMASS	(P) 17.10.2.4

**Table 17.10-1. Operations of Archive Media Interfaces - Activity Checklist  
(2 of 2)**

Order	Role	Task	Section
14	DIT	Ejecting EMASS Archive Media Using DAS	(P) 17.10.2.5
15	DIT	Removing Media from the EMASS EIF	(P) 17.10.2.6
16	DIT	Manual Ejection of EMASS Media	(P) 17.10.2.7
17	DIT	Removing Problem Media from the EMASS EIF	(P) 17.10.2.8
18	DIT	EMASS I/O Unit	(I) 17.10.3
19	DIT	Inserting Media into the EMASS I/O Unit	(P) 17.10.3.1
20	DIT	Ejecting Media from the EMASS I/O Unit	(P) 17.10.3.2
21	DIT	Removing Problem Media from the EMASS I/O Unit	(P) 17.10.3.3

### 17.10.1 STK Media Interface

The STK employs a CAP as an interface unit. The CAP is the access door to the storage unit as well as the means of inserting and ejecting media for the archive user. The CAP mode controls how a CAP will be used for cartridge enters and ejects. CAP modes are manual and automatic. In manual mode the CAP is locked when not in use. This is the initial mode for all multi-cartridge CAPs. When in manual mode, you can enter or eject cartridges only after issuing a command. In automatic mode, the CAP is unlocked when not in use. While in automatic mode, you can enter or eject cartridges without explicitly issuing an enter command. The enter is initiated when you open the CAP door, place a cartridge inside and close the CAP. Whether the CAP mode is in manual or automatic, you must explicitly issue an eject command to eject a cartridge.

#### 17.10.1.1 Manual Insertion of STK Media

The robotic unit retrieves cartridges from the CAP in two modes, manual and automatic. Manual mode requires the operator to request robot intervention in inserting media by issuing a command. This section discusses the manual insertion of media into the STK silo. The following procedures details how to insert tape cartridges by entering the silo, and by loading the CAP. Note that the ejection of media is always an operational request.

**Note: If using an ACSLS or DAS command to insert media, be aware that AMASS will not know of it's existence.**

##### 17.10.1.1.1 Insertion of STK Media Using Bulkload

Since the CAP functions as an access door, manual loading of media into storage slots is possible. When inserting a large number of tapes, it is faster to enter them directly into the silo by entering through the CAP. This is normally only done when populating a new silo.

Table 17.10-2 presents the steps required for manual insertion of media using the CAP. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **Open an ACSSA window on the SUN Workstation:**  
**Login as *acssa* and enter *password***
  - ACSSA mode entered and `cmd_proc` window opened.
2. **Enter `vary lsm 0,0, offline`**
  - There will be an audible click and the door will unlock
3. **Unlock CAP door with key**
  - Safety light red, caution
4. **Set latch for safety light to become green. Lock the latch and remove the key**
  - Prevents personnel from being locked inside.
5. **Enter the LSM and load or eject cartridges manually**
6. **Close CAP door**
7. **Lock door with key, lock latch, wait for robotic diagnostic completion**
8. **From an ACSSA `cmd_proc` window, enter `audit`**
9. **ACSLs will scan every volume label and update the ACSLS database.**
10. **Enter `bulkload -s`**
  - AMASS will synchronize it's database with ACSLS

**Table 17.10-2. Manual Insertion using CAP as an Access Door**

Step	What to Enter or Select	Action to Take
1	enter ACSSA window on SUN Workstation	
2	<b>vary lsm 0,0 offline</b>	audible click, door unlocks
3	unlock CAP door with key	safety light red, caution
4	set latch for safety light to become green	OK to enter
5	load or eject cartridges manually	
6	close CAP door	
7	lock door with key, lock latch, wait for robotic diagnostic completion	
8	<b>audit</b>	audit performed
9	<b>bulkload -s</b>	database sync

### 17.10.1.1.2 Insertion of STK Media Using Bulkinlet

Manual insertion of STK media through the CAP requires the operator to place tape cartridges into the CAP. The CAP has a capacity of 21 cartridges, three rows of seven each as shown in Figure 17.10-1. Insertion of cartridges must begin at the left hand corner of the top rack. If this is not done, the system will not insert the media. No spacing is allowed between media slots. The system interprets the space as the end of media for insertion. It stops input operations until door is opened and cartridges are input again.

The bulkinlet command is used to load multiple volumes through the mailbox, create entries in the AMASS database for *new* volumes, and mark volumes Online in the AMASS database. For tracking purposes, AMASS assigns each *new* volume a unique volume number. If you attempt to load several volumes at one time and one volume fails to load, AMASS will not load the remaining volumes after the first failure. For example, if you load volumes 1 through 6 and volume 3 is unsuccessful, AMASS successfully loads volumes 1 and 2 but does not load volumes 3, 4, 5, and 6.

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21

**Figure 17.10-1. Cartridge Insertion Order into CAP**

Table 17.10-3 presents the steps required for manual insertion of media using the CAP. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **Login as amass or root and enter the *password***
2. **Load volumes into the CAP mailbox. Make sure to start in the upper left slot and fill slots to the right and close the CAP.**

**3. Enter the following AMASS command:**

*bulkinlet volgroup*

- *volgroup* is the number of the volume group where the volumes are to be assigned.  
Options are: 0-2047, SP, and CL
  - audible click indicating the CAP is unlocked
  - AMASS assigns a unique volume number to each volume.
- a) **All new volumes in the AMASS database have an initial status of unformatted (U) and inactive (I). If the inserted volumes are new (unknown to AMASS), prepare the volumes so AMASS can read or write to them using the format procedure in section 17.5.1.**

**Table 17.10-3. Manual Insertion Using bulkinlet**

Step	What to Enter or Select	Action to Take
1	Login as <i>amass</i> or <i>root</i>	
2	Load volumes into the CAP mailbox	
3	Enter <b><i>bulkinlet volgroup</i></b>	audible click, door unlocks
4	For new volumes set <i>tapelength</i> , format and activate see section 17.5.1	see AMASS System Administrator's Guide

**17.10.1.2 Automatic Insertion of STK Media**

Automatic insertion of STK media into the CAP is accomplished without operator intervention.

Table 17.10-4 presents the steps required for automatic insertion of STK media using the CAP. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1. Enter ACSSA window on SUN Workstation:**  
**Login as *acssa* and enter *password***
  - ACSSA mode entered and *cmd\_proc* window opened.
- 2. If already in automatic mode go to step 3. If not, enter:**  
*set cap 0,0,0 mode automatic*
  - audible click indicating door is unlocked
- 3. Open CAP media door**
- 4. Load cartridges into the door , top left slot first**

5. **Close CAP door**

- Robot inserts media without operator intervention.

6. **If entering new media (unknown to AMASS) update the amass database using the command:**

*volnew volgroup slot vollabel*

ex. volnew SP NET SG0009

**Table 17.10-4. Automatic Insertion of STK Media**

Step	What to Enter or Select	Action to Take
1	enter ASCCA window on SUN Workstation	
2	enter set cap 0,0,0 mode automatic	audible sound from CAP, CAP unlocked
3	open CAP media door	
4	load cartridges into the door	top left slot first
5	close CAP door	robot inserts media without operator intervention
6	<b><i>volnew volgroup slot vollabel</i></b>	

**17.10.1.3 Manual Ejection of STK Media**

As mentioned previously, ejection of STK media is always requires manual intervention. Manual ejection can be by means of issuing commands or physically entering the Powderhorn LSM and removing a tape. Keep in mind that when a tape is physically removed from archive, the AMASS and ACSLS databases will think the tape is still in the LSM.

**17.10.1.3.1 Commanding Ejection of STK Media**

Table 17.10-5 presents the steps required for comanding ejection of STK media using the CAP. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. Determine which volumes you want to remove, utilizing the volume number. If necessary to review volume numbers and other information, log into the AMASS host, type **vollist** and then press the **Enter** key.
2. If there are only a few volumes to remove, then for each volume to be removed type: **/usr/amass/bin/voloutlet #**, where # is the volume number, and then press the **Enter** key.
  - AMASS marks the volume off-line and the volume is transferred to the CAP.

3. For the STK Powderhorn, open the recessed latch on the Cartridge Access Port (CAP) door and remove the tape(s)

**Table 17.10-5. Commanding Ejection of STK Media**

Step	What to Do	Action to Take
1	<b>Vollist</b>	Press <b>return</b>
2	<b>voloutlet volnumber</b>	Press <b>return</b>
3	Open CAP and remove tape	

### 17.10.1.3.2 Manually Removing STK Media From the Powderhorn Library Storage Module (LSM)

Table 17.10-6 presents the steps required for manual removal of media from the STK Powderhorn using the CAP as an access door. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **Enter ACSSA window on SUN Workstation:**  
**Login as** *acssa* **and enter** *password*
  - ACSSA mode entered and cmd\_proc window opened.
2. **Enter vary lsm 0,0 offline**
  - audible click indicating door is unlocked
2. **Unlock CAP door with key and open the access door.**
  - Safety light red, caution
2. **Set latch for safety light to become green by locking the CAP.**
3. **Enter the Powderhorn LSM and load or remove cartridges manually**
4. **Close CAP door**
5. **Lock door with key, wait for robotic diagnostic completion**

**Table 17.10-6. Manually Removing STK Media From the LSM**

Step	What to Enter or Select	Action to Take
1	enter ASCCA window on SUN Workstation	
2	<b>vary lsm 0,0 offline</b>	Listen for audible click
3	unlock CAP door with key	safety light red, caution
4	set latch for safety light to become green	OK to enter
5	load or remove cartridges manually	
6	close CAP door	
7	lock door with key	wait for robotic diagnostic completion

## 17.10.2 EMASS Media Interface Units

There are two EMASS media interface units for data archiving being utilized. Different media I/O interfaces exist for these units. The instructions in this section describe the manual procedures for operating either the Entry Interface Facility (EIF) or I/O Unit. The procedures include the insertion and removal of media before automated loading or after automated ejection from the archive.

The GODDARD DAAC EMASS AML/2 incorporates an EIF. Smaller capacity EMASS models may incorporate an I/O Unit.

### 17.10.2.1 Inserting Media into the EMASS EIF

The Goddard DAAC EMASS unit utilizes an Entry Interface Facility (EIF). The EIF is a media handling I/O unit. It utilizes three sections. Two of these sections allow the operator to input and output media. This is for archive storage as well as Foreign media. Foreign media have no bar-code number for storage to the archive. The media travels directly from the Foreign box to a selected drive for operations. When completed, it returns to the Foreign box for removal from the system.

A third section allows for the ejection of media classified as Problem media from the archive storage. The Problem box is a separate entity populated by the archive system. Removal of Problem media is an operator function.

Media are inserted into and ejected from the EMASS archive system through the EIF. Cartridges are loaded by hand into hand-carry racks, each with a capacity of 30 half-inch tape cartridges or 22 optical cartridges. The robot system physically moves each cartridge from the EIF to the AML. EMASS recommends that you turn ON the Auto Import option for each library. With this option on, you only need to place media into the EIF and close it.

The EIF uses a keypad with a display for commands. Figure 17.10-2 depicts the configuration for the EIF keypad configuration. The EIF handling boxes for Insert/Eject/Foreign Media compartments are fully selectable for either operation.

<p>COMMAND KEYPAD</p>	<p><u>Section 1 (TOP)</u> PROBLEM BOX</p> <p>Manual ROTATING TRAY [9 available slots per side]</p>
	<p><u>Section 2 (MIDDLE)</u> INSERT/EJECT/FOREIGN MEDIA</p> <p>4 ROTATING HANDLING BOXES [120 available slots]</p> <p>[keypad entries 1-4]</p>
	<p><u>Section 3 (BOTTOM)</u> INSERT/EJECT/FOREIGN MEDIA</p> <p>4 ROTATING HANDLING BOXES [120 available slots]</p> <p>[keypad entries 5-8]</p>

**Figure 17.10-2. EIF Keypad Configuration**

Table 17.10-7 presents the steps required for inserting media into the EMASS EIF. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **Verify that the Main Menu on the EIF keypad is active**
  - Display is lit
  
2. **Select Insert with cursor keys**
  - Insert is highlighted
  - a) Press **Enter**
    - Display shows selection for, handling box number entry
  
3. **Select handling box (1-8)**
  - Selection is displayed
  - a) Press **Enter**
    - Handling box selected is rotated, into access position
  
4. **Select Open Door with cursor keys**
  - Display prompts for reply to open door for access
  - a) Press **Enter**
    - Door opens
  
5. **Put media in Insert I/O box selected**
  - Option 1 Take out handling box and load with media
  - Option 2 Load handling box while in place
  - Make sure box is seated correctly
  
6. **Select Close Door with cursor keys**
  - Display prompts for reply to close door
  - a) Press **Enter**
    - Door closes, tray rotates 180 degrees

**Table 17.10-7. Inserting All Media Types into EIF - Quick-Step Procedure**

Step	Action to Take	Verification
1	Verify Main Menu is active on the EIF	Display is lit
2	Select <b>Insert</b> with cursor keys	Insert is highlighted
3	Press <b>Enter</b>	Display shows selection for, handling box number entry
4	Select <b>handling box (1-8)</b>	Selection is displayed
5	Press <b>Enter</b>	Handling box selected is rotated, to into access position
6	Select <b>Open Door</b> with cursor keys	Display prompts for reply to, open door for access
7	Press <b>Enter</b>	Door opens
8	Put media in Insert I/O box selected	Options: 1) Take out handling box and load with media 2) Load handling box while in place Make sure box is seated correctly
9	Select <b>Close Door</b> with cursor keys	Display prompts for reply to close door
10	Press <b>Enter</b>	Door closes, tray rotates 180 degrees

### 17.10.2.2 Automatically Loading EMASS Archive Media

Table 17.10-8 presents the steps required for inserting media into the EMASS EIF. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. To log in, type **amass** or **root** and then press the **Enter** key.
  - A password prompt is displayed.
2. Enter the **Password**, then press the **Enter** key.
  - Remember that Password is case sensitive.
  - You are authenticated (as amass or root) and returned to the UNIX prompt.
3. Remove the left box to insert or remove tape media, and/or remove the right box to insert or remove optical media.
4. Write down or note the bar code numbers on the labels of the cartridges, insert the cartridges in the removed box(es), reinsert the box(es) in the EIF, and close the door.

- The robot scans all the volumes.
5. At the AMASS host, type **/usr/amass/bin/bulkinlet SP** and then press the **Enter** key.
    - Data for the newly inserted media are displayed, including bar codes, associated volume numbers, and, in the flag column, the letters IUO, indicating that the volumes are inactive (I), unformatted (U), and offline (O).
  6. For any newly inserted media, it is necessary to issue a formatting command. For tapes, type **volformat #**, where # is the volume number. For optical cartridges, type **volformat -p #**, where # is the volume number. You can enter more than one, separating each number from the preceding one with a space.
- Note: You may wish to use the **&** (to run the process in the background) for formatting tapes as well as for optical cartridges. It is highly recommended for formatting optical cartridges, because of the length of time required.
7. A message requests confirmation that you wish to continue.
  8. Type **y** and then press the **Enter** key.
    - A message is displayed requesting further confirmation, stating that The following volumes will be formatted: and listing volume numbers, followed by (Y-N).
  9. Type **y** and then press the **Enter** key.
    - After a few minutes (or, for optical cartridges, about an hour for each), a message; Completed formatting all volumes is displayed.
  10. To verify that the volume(s) are inserted, type **/usr/amass/bin/vollist** and then press the **Enter** key.
  11. Data for the media are displayed; the flag column shows that the newly formatted volumes are inactive (I).
  12. To activate the media for use, type:  
**volstat -a**
  13. Data for the media are displayed; the flag column shows that the volumes are now active (A).

**Table 17.10-8. Automatically Loading EMASS Archive Media - Quick-Step Procedure**

Step	What to do	Action to Take
1	<b>amass</b> or <b>root</b>	Press <b>return</b>
2	Insert or remove media	Remove left tape box for tape media or right box for optical media
3	Load cartridges	Note labels, load boxes and insert into EIF
4	<b>/usr/amass/bin/bulkinlet SP</b>	Press <b>return</b>
5	<b>volformat (-p) volnumber</b>	Press <b>return</b>
6	Confirm format	Enter <b>Y</b>
7	<b>/usr/amass/bin/vollist</b>	Press <b>return</b>
8	<b>volstat -a</b>	Press <b>return</b>

### 17.10.2.3 Manually Loading EMASS Archive Media

With the bulkload command, you bypass the EIF and manually load media directly into the library bins. Typically, this will only be done at the initial load of the system with large numbers of media volumes. The bulkload command enables AMASS to determine what type of media have been placed in the library and to convey this information to the AMASS database. The following procedures are applicable. Table 17.10-9 presents the steps required for inserting media into the EMASS bins. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:



**If it is necessary to enter the AML after AMASS is started, the following step (Step 1) must be performed first to avoid hazard and ensure safety of personnel and equipment.**

1. Turn the **Operation Mode** switch, located above the AMU keyboard shelf, to **manual** by rotating it to the horizontal position.
  - The Control Off amber light comes on.
  - All power to the robot and tower is then turned off and it is safe to enter the enclosed area.

2. Press the **Illumination On** button.
  - The overhead light in the AML comes on.
3. Turn the **key** to the access door two full turns **clockwise** to open the door.
  - Physically enter the library and load the desired media into the bins.

### Caution

**The following step (Step 4) must be performed before leaving the enclosed area to ensure proper functioning of the AML robot.**

4. Before leaving the enclosed area, straighten the robot arm so that it is parallel to the main hallway and pointing to the front of the AML.



**To avoid hazard and ensure safety of personnel and equipment, the following step (Step 5) must be performed before Step 6.**

5. On leaving the area, lock the door by turning the **key** two full turns **counterclockwise**.
6. Turn the **Operation Mode** switch, located above the AMU keyboard shelf, to **automatic** by rotating it to the **vertical** position.
  - The Control Off amber light goes off.
7. From a DAS command line, execute the **inventory** command, DAS will scan all AML media and update the archive catalogue.
  - The archive catalogue can be viewed with the **list** command.
8. At the AMASS host, type **bulkload -s SP** and then press the **Enter** key.
  - The AMASS database is populated with data for the volumes in the AML.
9. To view a list of media in the AML, type **medialist [-#]** (where # is the jukebox identification number), and then press the **Enter** key.
  - If you do not specify a jukebox number with the **-#** option, the default is 1, which specifies the EMASS AML optical disks.

- If you want to specify a different jukebox, specify -2 to indicate the EMASS AML tapes.
- The utility reads the library element status stored in the library, and information about the library contents, including the status (FULL or EMPTY) of the elements.

**Table 17.10-9. Manually Loading EMASS Archive Media - Quick-Step Procedure**

Step	Action to Take	Verification
1	Turn <b>operational mode</b> switch to <b>manual</b>	Control Off amber light comes on
2	Press the <b>Illumination On</b> button.	The overhead light in the AML comes on
3	Turn key two full turns <b>clockwise</b>	Enter library and load media
4	Turn the <b>Operation Mode</b> switch to <b>Automatic</b>	The Control Off amber light goes off
5	<b>Inventory</b>	DAS scans media
6	<b>bulkload -s SP</b>	AMASS database is updated

#### 17.10.2.4 Ejecting EMASS Archive Media Using AMASS

Ejecting media from archive is always a manual operation. Problem media however, may be moved to the Problem Box automatically. Table 17.10-10 presents the steps required for ejecting EMASS archive media using AMASS commands. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. Determine which volumes you want to remove by utilizing the volume number. If necessary to review volume numbers and other information, log into the AMASS host, type `/usr/amass/bin/vollist` and then press the **Enter** key.
2. If there are only a few volumes to be removed; for each volume to be removed type: `/usr/amass/bin/voloutlet #`, where # is the volume number, and then press the **Enter** key.
  - AMASS marks the volume off-line and the volume is transferred to the EIF.
3. Remove the left box to remove tape media, and/or remove the right box to remove optical media.

**Table 17.10-10. Ejecting EMASS Archive Media Using AMASS - Quick-Step Procedure**

Step	What to do	Action to Take
1	<code>/usr/amass/bin/volllist</code>	Press <b>return</b>
2	<code>/usr/amass/bin/voloutlet #</code>	Press <b>return</b>
3	Remove media	Remove the left box to remove tape media, and/or remove the right box to remove optical media

### 17.10.2.5 Ejecting EMASS Archive Media Using DAS

Ejecting media from archive is always a manual operation. Problem media however, may be moved to the Problem Box automatically. Table 17.10-11 presents the steps required for ejecting EMASS archive media using DAS commands. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- Determine which volumes you want to remove by utilizing the volser label. If necessary to review volser labels, log into the DAS host, type `dasadmin list` and then press the Enter key. For more information on the use of DAS commands, see the *DAS Administration Guide*. The DAS guide can be viewed using Adobe Acrobat and is available electronically on servers `g0drg01` and `g0drg02` in `/usr/amass/books`.
- After determining which volumes to remove, type:  
**`dasadmin eject (ej) [-c] [-t media-type] volser-rangearea`**
  - DAS marks the volume ejected and the volume is transferred to the EIF.
  - See Table 17.10-12 for parameter descriptions.
- Remove the left box to remove tape media, and/or remove the right box to remove optical media.

**Table 17.10-11. Ejecting EMASS Archive Media Using DAS - Quick-Step Procedure**

Step	What to do	Action to Take
1	<code>dasadmin list</code>	Press <b>return</b>
2	<code>dasadmin eject (ej) [-c] [-t media-type] volser-rangearea</code>	Press <b>return</b>
3	Remove media	Remove the left box to remove tape media, and/or remove the right box to remove optical media

Table 17.10-12 provides an explanation of DAS command parameters. Table 17.10-13 provides a list of media types specified by the parameter *media-type*.

**Table 17.10-12. Parameter Explanation**

-c	The optional parameter -c indicates to DAS a complete eject operation requested (volser will be removed from the archive catalog)
media-type	The optional media-type parameter allows the specification of a media type (see table 9-13).
volser-range	The volser-range specifies one or more volsers to be ejected. The volser range must be in one of the following formats: volser   volser, volser,...   volser-volser.
area	The area specifies the eject area name in the I/O unit to which the volume(s) are moved (e.g. E01).

**Table 17.10-13. Media Types**

Media Types	Type Explanation	AMU-Types
3480 3480 and 3490 and 3490E	Cartridges	C0
3590 3590/8590	Cartridges	C2
OD-THIN	Optical disk Reflection (9 mm)	O0
OD-THICK	Optical disk 512, MO/WORM (11mm)	O1
CD	CD-ROM disk (CD-Caddy)	C6
TRAVAN	TRAVAN cartridge	V5
BETACAM	BETACAM cartridge	V8
DECDLT	TK-85 Digital Linear Tape (DLT)	C1
8MM	D8 cartridge (8 mm)	V1
4MM	DDS or DAT cartridge (4mm) (Digital Data Storage)	V2
VHS	VHS cartridge	V0
D2	Small and medium cartridge	V3 (V4)
DTF	DTF small and medium cartridge	V6 (V7)

### 17.10.2.6 Removing Media from the EMASS EIF

Table 17.10-14 presents the steps required for removing all ejected media types from the EIF. If you are already familiar with the procedures, you may prefer to use this quick-step table. If

you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. Verify that the Main Menu on the EIF keypad is active
  - Display is lit
2. Select **Eject** with cursor keys
  - Eject is highlighted
3. Press **Enter**
  - Display shows selection for, handling box number entry
4. Select **Eject handling box (1-8)**
  - Selection is displayed
5. Press **Enter**
  - Handling box selected is rotated, into access position
6. Select **Open Door** with cursor keys
  - Display prompts for reply to open door for access
7. Press **Enter**
  - Door opens
8. Remove media in Eject I/O box.
  - Option 1 Take out handling box and unload media
  - Option 2 Unload handling box while in place
  - Make sure box is seated correctly
9. Select **Close Door** with cursor keys
  - Display prompts for reply to close door
10. Press **Enter**
  - Door closes

**Table 17.10-14. Removing All Ejected Media Types from EIF - Quick-Step Procedure**

<b>Step</b>	<b>Action to Take</b>	<b>Verification</b>
1	Verify Main Menu is active on the EIF	Display is lit
2	Select <b>Eject</b> with cursor keys	Eject is highlighted
3	Press <b>Enter</b>	Display shows selection for, handling box number entry
4	Select <b>Eject handling box (1-8)</b>	Selection is displayed
5	Press <b>Enter</b>	Handling box selected is rotated, to into access position
6	Select <b>Open Door</b> with cursor keys	Display prompts for reply to, open door for access
7	Press <b>Enter</b>	Door opens
8	Remove media in Eject I/O box selected	Options: 1) Take out handling box and unload media 2) Unload handling box while in place Make sure box is seated correctly
9	Select <b>Close Door</b> with cursor keys	Display prompts for reply to close door
10	Press <b>Enter</b>	Door closes

### 17.10.2.7 Manual Ejection of EMASS Media

As mentioned previously, ejection of STK media is always requires manual intervention. Manual ejection can be by means of issuing commands or physically entering the Powderhorn LSM and removing a tape. Keep in mind that when a tape is physically removed from archive, the AMASS and ACSLS databases will think the tape is still in the LSM. Table 17.10-15 presents the steps required to eject EMASS media. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. Determine which volumes you want to remove, utilizing the volume number. If necessary to review volume numbers and other information, log into the AMASS host, type **vollist** and then press the **Enter** key.
2. If there are only a few volumes to remove, then for each volume to be removed type: **/usr/amass/bin/voloutlet #**, where # is the volume number, and then press the **Enter** key.
  - AMASS marks the volume off-line and the volume is transferred to the CAP.
3. For the STK Powderhorn, open the recessed latch on the Cartridge Access Port (CAP) door and remove the tape(s)

**Table 17.10-15. Ejecting EMASS Archive Media Using DAS - Quick-Step Procedure**

Step	What to do	Action to Take
1	<b>Vollist</b>	Press <b>return</b>
2	<b>/usr/amass/bin/voloutlet #,</b>	Press <b>return</b>
3	Remove media	Open the recessed latch on the Cartridge Access Port (CAP) door and remove the tape(s)

### 17.10.2.8 Removing Problem Media from the EMASS EIF

Table 17.10-16 presents the steps required to remove Problem media from the EIF media interface unit. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **Verify that the Main Menu on the EIF keypad is active**
  - Display is lit
2. **Press F1 key**
  - Audible click, Problem Box unlocks
3. **Open doors**
  - Swing open both doors to full extent
4. **Manually spin tray 180 degrees, clockwise**
  - Expelled tapes are now accessible to operator
5. **Remove media**
  - Remove tapes from tray
6. **Close Door**
  - Swing doors closed

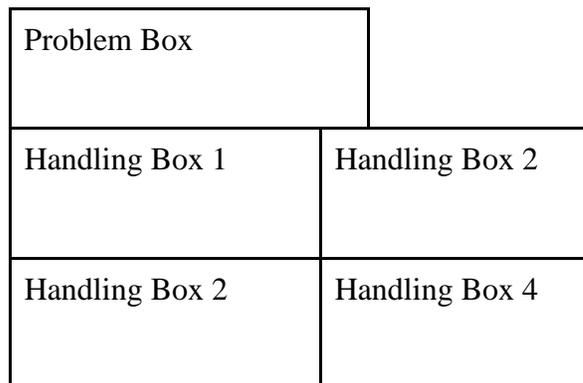
**Table 17.10-16. Removing Problem Media - Quick-Step Procedure**

Step	Action to Take	Verification
1	Verify Main Menu is active on the EIF	Display is lit
2	Press <b>F1</b> cursor key	Audible click, Problem Box unlocks
3	Open doors	Swing open both doors to full extent
4	Manually spin tray 180 degrees, clockwise	Expelled tapes are now accessible to operator
5	Remove Media	Remove tapes from tray
6	Close doors	Swing doors closed

### 17.10.3 EMASS I/O UNIT

The I/O Unit is the media interface on EMASS models not located at the Goddard facility. The unit consists of three media compartments. The top compartment is the Problem Box reserved for system ejected media. The middle and bottom compartments are the operational insertion and ejection compartments for storage and Foreign media. The unit has EMERGENCY STOP, ON, and OPERATION buttons. There is also a shutter system that isolates the I/O compartments from the robotics unit.

Figure 17.10-3 displays the basic layout for the EMASS I/O Unit.



**Figure 17.10-3. EMASS I/O Unit Layout**

#### 17.10.3.1 Inserting Media into the EMASS I/O UNIT

Table 17.10-17 presents the steps required inserting media into the EMASS I/O Unit. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1. Press ON push-button**

- Generates door opening request
  - **Shutter closes**
  - **At closing of shutter, OPERATION push-button illuminates**
  - **ON push-button goes off**
2. Open I/O door as far as possible, 15 sec timer
    - I/O media compartment is now ready
    - If timer is not met, shutter closes, Step 1 has to be repeated
  3. **Remove Handling box or boxes**
    - **Audible Click from seating switch**
  4. Insert tapes into box starting with the left slot in bottom row
  5. Insert the handling box into the I/O
    - Place the box correctly, tapes face toward the rear of unit, a seating switch will click if done properly
  6. **Close the I/O door**
    - Audible latch at door closing
    - OPERATION light pulses if handling boxes are not seated correctly
    - Shutter closes automatically
    - OPERATION and ON push-buttons turn off

**Table 17.10-17. Inserting All Media Types into I/O Unit - Quick-Step Procedure**

Step	Action to Take	Verification
1	Press <b>ON</b> push-button	Generates door opening request: 1) Shutter closes 2) At closing of shutter, <b>OPERATION</b> push-button illuminates 3) <b>ON</b> push-button goes off
2	Open I/O door as far as possible, 15 sec timer	I/O media compartment is now ready: 1) If timer is not met, shutter closes, Step 1 has to be repeated
3	Remove Handling box or boxes	Audible Click from seating switch
4	Insert tapes into box starting with the left slot in bottom row	
5	Insert the handling box into the I/O	Place the box correctly, tapes face toward the rear of unit, a seating switch will click if done properly
6	Close the I/O door	1) Audible latch at door closing <b>OPERATION</b> light pulses if handling boxes are not seated correctly 3) Shutter closes automatically <b>OPERATION</b> and <b>ON</b> push-buttons turn off

### 17.10.3.2 Ejecting Media into the EMASS I/O UNIT

Table 17.10-18 presents the steps required for removing all ejected media types from the EMASS I/O unit. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

#### 1. Press **ON** push-button

- Generates door opening request
- **Shutter closes**
- **At closing of shutter, OPERATION push-button luminates**
- **ON push-button goes off**

#### 2. Open I/O door as far as possible, 15 sec timer

- I/O media compartment is now ready
- If timer is not met, shutter closes, Step 1 has to be repeated

#### 3. Remove Handling box or boxes

- Audible Click from seating switch

4. Remove tapes from box

5. Insert the handling box into the I/O

- Place the box correctly, tapes face toward the rear of unit, a seating switch will click if properly

**6. Close the I/O door**

- Audible latch at door closing
- OPERATION light pulses if handling boxes are not seated correctly
- Shutter closes automatically
- OPERATION and ON push-buttons turn off

**Table 17.10-18. Removing All Ejected Media Types from I/O Unit - Quick-Step Procedure**

Step	Action to Take	Verification
1	Press ON push-button	Generates door opening request: 1) Shutter closes 2) At closing of shutter, OPERATION push-button luminates 3) ON push-button goes off
2	Open I/O door as far as possible, 15 sec timer	I/O media compartment is now ready: 1) If timer is not met, shutter closes, Step 1 has to be repeated
3	Remove Handling box or boxes	Audible Click from seating switch
4	Remove tapes from box	
5	Insert the handling box into the I/O	Place the box correctly, tapes face toward the rear of unit, a seating switch will click if done properly
6	Close the I/O door	1) Audible latch at door closing 2) OPERATION light pulses if handling box is not seated correctly 3) Shutter closes automatically OPERATION and ON push-buttons turn off

### 17.10.3.3 Removing Problem Media from the EMASS I/O UNIT

Table 17.10-19 presents the steps required for removing media from the EMASS I/O Unit Problem Box. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1. **Press ON push-button**
  - Generates door opening request
  - **Shutter closes**
  - **At closing of shutter, OPERATION push-button luminesces**
  - **ON push-button goes off**
  
2. Open I/O door as far as possible, 15 sec timer
  - I/O media compartment is now ready
  - If timer is not met, shutter closes, Step 1 has to be repeated
  
3. **Remove tapes from Problem Box**
  
4. **Close the I/O door**
  - Audible latch at door closing
  - OPERATION light pulses if handling boxes are not seated correctly
  - Shutter closes automatically
  - OPERATION and ON push-buttons turn off

**Table 17.10-19. Removing Problem Media from I/O Unit- Quick-Step Procedure**

Step	Action to Take	Verification
1	Press <b>ON</b> push-button	Generates door opening request: 1) Shutter closes 2) At closing of shutter, OPERATION push-button luminates 3) ON push-button goes off
2	Open I/O door as far as possible, 15 sec timer	I/O media compartment is now ready: 1) If timer is not met, shutter closes, Step 1 has to be repeated
3	Remove tapes from Problem Box	
4	Close the I/O door	1) Audible latch at door closing 2) OPERATION light pulses if one of the handling boxes are not seated correctly 3) Shutter closes automatically 4) OPERATION and ON push-buttons turn off

## 17.11 Archiving Application Log Files to AMASS

The purpose of this Operations Procedure is to support permanent archiving of ECS Application Log files (ALOGs) to the AMASS archive device as and when required. Use of this procedure is DAAC optional. However if application logs are to be written to the archive it is recommended that this procedure be adhered to.

The ECS system ALOG files capture messages from ECS code on requests, responses and status. One ALOG file is generated per individual ECS custom code component (see ECS software baseline documentation, e.g. 910-TDA-007). Under normal operating conditions the ALOG files are not saved but are over-written by continuous process logging when they reach their maximum size. The procedure documented here should be employed whenever it is decided that at a particular time a log file or files need to be preserved.

The overall process is straightforward. Initial set-up must be completed by DAAC AMASS Operators. Individual file archiving and retrieval is then undertaken using a Unix account created for this purpose: “alogxfr”. ALOG files are copied on the application server to the home directory of user “alogxfr” and then, on a STMGT host which mounts the AMASS cache, from there into the archive in the form of a specific Volume Group in AMASS. The Volume Group and its internal directory structure must be pre-configured as must the account “alogxfr”.

File uniqueness in the archive and retrieval from the archive rely on (i) division of the volume structure by sub-system and application, (ii) preservation of default ALOG file naming in writing to the archive and (iii) where necessary file name extension with unique numbering.

**Table 17.11-1. Archiving Application Log Files - Activity Checklist**

Order	Role	Task	Section
1	DAM/DIT	Configuration	(I) 17.11.1
2	DAM/DIT	Amass Volume/ Volume Group set – up	(I) 17.11.1.1
3	DAM/DIT	Secure Shell ALOG file transfer account setup	(P) 17.11.1.2
4	DAM/DIT	ALOG file archiving	(I) 17.11.2
5	DAM/DIT	Verify/ create required Archive Volume Group and Subdirectory	(P) 17.11.2.1
6	DAM/DIT	Verify/create subsystem/application specific subdirectory	(P) 17.11.2.2
7	DAM/DIT	Copy ALOG file and write to archive	(P) 17.11.2.3
8	DAM/DIT	ALOG file retrieval from archive	(P) 17.11.3

### 17.11.1 Configuration

Use of these procedures requires (i) the setting up of a system wide account to support ALOG file copying over the network and (ii) initialization of a specific AMASS Volume Group in which to archive the files.

#### 17.11.1.1 AMASS Volume / Volume Group Set-up

The following Volume Group assignment must be made, and the directory structure created, before ALOG files are archived. Failure to do this will imply that the files are either not archived correctly or will not be retrievable from the documented locations.

The Volume Group “mss” should be pre-configured in the local archive. If it is not it needs to be defined. This Volume Group may also be used for archiving of certain MSS ESDTs. However that usage and this archiving of ALOGs should not interfere with one another. For first usage the Volume Group will also require the addition of an initial Volume (tape).

In the following the local/applicable AMASS cache mount point may differ from that shown i.e. “/dss\_stk1/OPS”. Check your local DAAC configuration. Below that directory a sub-directory for the volume group should be found named “mss”. Within that directory a specific directory for archiving of ALOG files by this procedure is required i.e. “ALOGs”. Sub-directories below that shall be used for ALOG files from each ECS sub-system by three-letter abbreviation in upper-case, i.e. “IDG”, “MSS”, “DSS”, “PLS”, “DPS”, etc. Hence, as an example, to archive DPS ALOG files the following directory must exist in the AMASS cache:

“/dss\_stk1/OPS/mss/ALOGs/DPS/”

Note: If this procedure is heavily used DAAC Operations may optionally insert additional levels of sub-division under the “ALOGs” directory, for example by calendar year of the date-stamp of the ALOGs archived, e.g.:

“/dss\_stk1/OPS/mss/ALOGs/1999/DPS/”

### 17.11.1.2 Secure shell ALOG file transfer account Set-up

The following account for use with this procedure should be pre-defined. If it is not the likely cause is that the ECS baseline configuration changes related to this procedure have not yet been propagated to your environment. Refer to the ECS CCB and/or MSS sub-system support for guidance.

The account for ALOG file transfer is called “alogxfr”. This must be defined as a network (i.e. NIS) account. It may be configured for secure access (i.e. use of “ssh” without supplying of a password) to all local ECS custom code application servers. To enable this configuration refer to local System Administration support (i.e. to set-up secure shell connection without password entry).

### 17.11.2 ALOG File Archiving Procedure

The following procedures explain how to properly verify and create the required archive and Volume Group for the archiving of operational ALOG files. Complete steps are provided, that step through the process of creating and logging ALOG files to the archive. Quick steps are provided for reference, after the operator has developed an understanding of the following procedures.

#### 17.11.2.1 Verify/create required archive Volume Group and sub-directory

As described above ALOGs are to be archived by sub-system and application to specific AMASS sub-directories within the “mss” Volume Group.

1. As input to this procedure you will need to know the following information:
  - The name of the ALOG file to be archived and its full file path if non-standard.
  - The name of the application server from which the ALOG file is to be copied.
  - How to determine the ALOG file’s applicable ECS sub-system and application.
  - Which STMGT hosts mount the AMASS cache and the local name of the mount point for that cache.
  - The alogxfr account *password* (for copying ALOG files from the application servers).
  - For actions within this section support of an AMASS operator and/or root (i.e. for initial configuring of the archive).
2. Select the STMGT host for use in this activity. It must mount the AMASS cache e.g. directory: /dss\_stk1

Within this procedure this mount point will be referenced as “acmountp”.

3. Login as alogxfr to the chosen STMGT host and enter the *password*
  - Remember that your password is case sensitive.

4. Use the **amassstat** command to determine if AMASS is running. If it is not you can not continue until AMASS has been restarted. Refer to local AMASS Operators.
5. Check that the required archive Volume Group exists within the required MODE and has the correct ownership and permissions by use of the command:

```
ls -l /<acmountp>/<mode>/mss
```

Typically “mode” will be “OPS”. Hereafter this procedure assumes use of mode “OPS”. Replace with the relevant mode as necessary.

If the above directory does not exist refer to the description in “Configuration” above and seek support from DAAC System Administration / STMGT operators to create the required Volume Group / add a volume to that group. This should only be necessary when (i) this procedure is first used and (ii) a new tape volume needs to be added to the volume group (i.e. rarely).

6. Check that the required sub-directory exists and has the correct ownership and permissions by use of the command:

```
ls -l /<acmountp>/OPS/mss/ALOGs
```

This directory must exist and be owned by use “alogxfr”. If it does not exist, it must be created with the command “mkdir”.

```
mkdir /<acmountp>/OPS/mss/ALOGs
```

This may require permissions of the AMASS operator or root. If the directory is not owned by “alogxfr”(e.g. it has just been created) its ownership must be set. This may require root permission.

```
chown alogxfr /<acmountp>/OPS/mss/ALOGs
```

Repeat the ‘ls -l’ command above to check the directory’s ownership and permissions.

**Table 17.11-2. ALOG file archiving procedure – Quick-Steps**

Step	What to Do	Action to take
1	Login to Storage Management Host	Type login alogxfr
2	Determine if AMASS is running	Type ammassstat
3	Check that the required archive group exists	Type ls -l /<acmountp>/<mode>/mss
4	Check that the required subdirectory exists	Type ls -l /<acmountp>/OPS/mss/ALOGs

### 17.11.2.2 Verify/create Sub-system/Application Specific Sub-directory

The procedure may start with this step if the “mss” archive volume and “ALOGs” sub-directory have previously been verified and/or created as above.

1. If you are not already logged in as “alogxfr” set your userid to this user with use of the command ‘su’ as follows:

su - alogxfr

Note the '-' is separated by white-space from the userid 'alogxfr'. Enter the 'alogxfr' account password when prompted. Verify that you are now user 'alogxfr' with the command 'whoami'.

2. ALOG files have a standard file naming format as follows:

<ApplicationName>.ALOG.<timestamp>

To archive this ALOG file from the ApplicationName determine the sub-system and application to which the log belongs, e.g. file:

EcDsScienceDataServer.ALOG.19981014232357

is from the sub-system DSS and application "ScienceDataServer". Refer to ECS system software overview documentation for guidance.

3. Verify that the required sub-system sub-directory exists and has the correct ownership and permissions by use of the command e.g.:

ls -l /<acmountp>/OPS/mss/ALOGs/DSS

If it does not exist use "mkdir" to create it. It must be owned by user "alogxfr".

4. Check that the required application sub-directory exists by use of the command e.g.:

ls -l /<acmountp>/OPS/mss/ALOGs/DSS/ScienceDataServer

Be sure to avoid missing directories because of case sensitivity. If the directory does not exist use "mkdir" to create it. It must also be owned by user "alogxfr".

**Table 17.11-3. Verify/Create Subsystem specific subdirectory – Quick-Steps**

Step	What to Do	Action to take
1	Verify that you are logged in as alogxfr	Type whoami
2	Determine subsystem to which ALOG belongs	Refer to ECS software documentation for guidance
3	Verify that subsystem subdirectory exists and has correct permissions	Type ls -l /<acmountp>/OPS/mss/ALOGs/DSS
4	Check that the required application sub-directory exists by use of the command	Type ls -l /<acmountp>/OPS/mss/ALOGs/DSS /ScienceDataServer

### 17.11.2.3 Copy ALOG file and Write to archive

The procedure may start with this step if the sub-system and application specific archive sub-directory has previously been verified and/or created as above.

1. If you are not already logged in as "alogxfr" set your userid to this user with use of the command 'su' as follows:

su - alogxfr

Note the '-' is separated by white-space from the userid 'alogxfr'. Enter the 'alogxfr' account password when prompted. Verify that you are now user 'alogxfr' with the command 'whoami'.

2. Copy the required ALOG file from the application host to the home directory of user 'alogxfr'. This can be achieved by more than one sequence of commands. However the

recommended route is by use of the 'secure shell' command, 'ssh'. Assuming the application host name is "remhost", 'secure shell' to it with the command:

```
ssh <remhost>
```

If prompted enter the password for the alogxfr account. If you enter the correct password and the connection is refused (e.g. with the message "Secure connection to <remhost> refused") then contact your local System Administration to enable 'ssh' for account 'alogxfr'.

Assuming the ALOG file is in the location "alogdir" and named "alogfile" verify its existence and size with the command:

```
ls -l /<alogdir>/<alogfile>
```

Now copy the file to the home directory of user 'alogxfr':

```
cp -p /<alogdir>/<alogfile> ~
```

Note: for OPS mode the default location of the ALOG file (value of "<alogdir>") is:

```
/usr/ecs/OPS/CUSTOM/logs
```

Exit from the 'ssh' session using:

```
exit
```

Verify that you are now running again on the STMGT host and still as account "alogxfr" with the commands:

```
hostname
```

```
whoami
```

3. Verify that the file has been successfully copied by comparing the results of the following 'ls' with those of the 'ls' command above:

```
ls -l ~/<alogfile>
```

The file size should be the same or slightly larger than before (if the ALOG file is in use it may have grown slightly in the interval between the above 'ls -l' and 'cp' commands).

4. Change directory to the appropriate sub-directory location within the "mss" volume group for this file. For example for file  
EcDsScienceDataServer.ALLOG.19981014232357

Change directory to the sub-system DSS and application "ScienceDataServer" sub-directory i.e.:

```
cd /<acountp>/OPS/mss/ALOGs/DSS/ScienceDataServer
```

5. **NOTE** that only one copy of a given ALOG file name can be preserved within a single directory in the archive. Uniqueness of ALOG files is determined by their "<timestamp>" component. This value (format ".YYYYMMDDHHMMSS" e.g. ".19981014232357") identifies to the second the date and time of the file's creation. To enable multiple instances of the same named ALOG file (i.e. with the same file name including the timestamp) to be archived the file name in the archive should be extended with an operator entered three-digit numbering extension, e.g. ".001".

6. Check for pre-existence in the archive of an identically named file with the command:

```
ls -l ./<alogfile>???
```

If any such files are found select the next available three-digit file extension number, i.e. ".nnn".

7. Write the ALOG file to be archived to the AMASS cache. **NOTE** currently (Feb. 1999) this action must **NOT** use the normal Unix 'cp' command. Instead the ECS command "EcUtCopyExec" must be used. To write the first instance of a specific ALOG file (normal activity) use:

EcUtCopyExec ~alogxfr/<logfile> .

To write a new instance of the file (i.e. because the ALOG file name has not been updated by server restart since a previous copy of the log was archived) use:

EcUtCopyExec ~alogxfr/<logfile> ./<logfile>.<nnn>

8. The EcUtCopyExec action commits the file to the archive but the copy in ~alogxfr must now be removed.

Check that the file has been successfully copied with command:

ls -l ./<logfile>

The file size should be the same as that in ~/alogxfr i.e. compare the output from the above 'ls' with the output from:

ls -l ~/<logfile>

The local copy of the ALOG file made in ~alogxfr must now be removed. Move to the home directory of user alogxfr, check the existence of the local ALOG file copy, remove it and check on its deletion with the following commands:

cd

ls <logfile>

rm <logfile>

ls <logfile>

This completes the procedure for archiving of an ALOG file.

**Table 17.11-4. Copy and write ALOG file to Archive– Quick-Steps**

Step	What to Do	Action to take
1	Verify that you are logged in as alogxfr	Type whoami
3	Login to remote host	Type ssh <remote host name>
4	Verify existence and sizeof of ALOG file in directory	Type ls -l /<alogdir>/<logfile>
5	Copy the file to the home directory user alogxfer	Type cp -p /<alogdir>/<logfile> ~
6	Exit the secure shell session	Type exit
7	Compare the file transfer results	Type ls -l ~/<logfile>
8	Change directory to the appropriate sub-directory	cd /<acountp>/OPS/mss/ALOGs/DSS/ScienceDataServer
9	Check for pre-existence in the archive of an identically named file	Type ls -l ./<logfile>???
10	Write the ALOG file to be archived to the AMASS cache	Type EcUtCopyExec ~alogxfr/<logfile>
11	Check that the file has been successfully copied	ls -l ./<logfile>
12	Remove the local copy of the ALOG file made in ~alogxfr.	rm <logfile>

### 17.11.3 ALOG File Retrieval from Archive

This procedure supports retrieval from the archive to the home directory of the “alogxfr” account of a specific instance of an ALOG.

1. As input to this procedure you will need the following information:
  - The name of the source ECS application which created the ALOG file and which ECS sub-system it belongs to.
  - To know which STMGT hosts mount the AMASS cache and the local name of the mount point for that cache.
  - The alogxfr account *password* (for writing local copy of the ALOG file).
2. Select the STMGT host for use in this activity. It must mount the AMASS cache e.g. directory: /<acmountp>/OPS/

Within this procedure this mount point will be referenced as “acmountp”.

3. Login as alogxfr to the chosen STMGT host and enter the *password*
  - Remember that your password is case sensitive.
4. Use the **amasstat** command to determine if AMASS is running. If it is not you can not continue until AMASS has been restarted. Contact the AMASS Operator.
5. Check that the required top-level Volume Group “mss” can be accessed by use of the command:

```
ls /<acmountp>/OPS/mss
```

For modes other than “OPS” substitute the required mode abbreviation. If this command fails then contact STMGT/Archive operators to check on the Volume Groups availability.

6. Check that the next required level of sub-directory also exists i.e.

```
ls /<acmountp>/OPS/mss/ALOGs
```

If it does not then no ALOG files have been correctly entered into the archive using the above procedure or the AMASS archive database has been lost or corrupted.

7. Determine the ECS Sub-system and Application names for the ALOG file being sort. You can also use the commands ‘ls’ and ‘cd’ to search the sub-directories under volume group “mss” for available archived ALOGs.
8. ALOG files follow a standard naming convention of:

```
<ApplicationName>.ALOG.<timestamp>
```

This file naming is preserved when they are written to the archive by the above procedure (with the optional addition of a three-digit numeric identifier). In particular from the

“ApplicationName” the originating sub-system and ECS application name can be derived. The timestamp identifies the date and time at which the ALOG file was created.

9. For example for ALOG file:

```
EcDsScienceDataServer.ALOG.19981014232357
```

the related sub-system is “DSS” and application name “ScienceDataServer”. These values are used to define the sub-directory in which applicable ALOG files have been archived, e.g. in sub-directory “/ <acmountp>/OPS/mss/DSS/ ScienceDataServer”.

10. Change directory to the location where the required ALOG file(s) reside, e.g.

```
cd / <acmountp>/OPS/mss/ALOGs/DSS/ ScienceDataServer
```

11. Search for matching ALOG files with ‘ls’ e.g.:

```
ls < ApplicationName >.ALOG.*
```

12. Select the ALOG file(s) required. Where multiple instances of the identically named (i.e. including time-stamped) file were archived they should be differentiated by a numerical file name extension, e.g. “.001”, and by their file creation time (time of file copying into the archive).

13. Read a copy of the ALOG file from the archive. **NOTE** currently (Feb. 1999) this action must **NOT** use the normal Unix ‘cp’ command. Instead the ECS command “EcUtCopyExec” must be used. To copy a specific ALOG file (normal activity) to the home directory of user “alogxfr” use:

```
EcUtCopyExec <alogfile> ~
```

14. The ALOG file copy should now be available in the home directory of user “alogxfr” for further use, i.e. can be found with one or all of the following commands:

```
ls -l ~/<alogfile>
```

```
ls -l ~alogxfr/<alogfile>
```

```
cd; ls -l <alogfile>
```

The file size should match that in the archive copy. This completes the procedure for reading ALOG files from the archive.

**Table 17.11-5. ALOG file retrieval from Archive – Quick-Step Procedures**

<b>Step</b>	<b>What to Do</b>	<b>Action to take</b>
1	Login to Storage Management Host	Type login alogxfr
2	Determine if AMASS is running	Type ammassstat
3	Check that the required top level Volume Group can be accessed	Type ls /<acmountp>/OPS/mss
4	Check that the next required level of sub-directory also exists	Type ls /<acmountp>/OPS/mss/ALOGs
5	Change directory to the location where the ALOG file(s) reside.	cd /<acmountp>/OPS/mss/ALOGs/DSS/ ScienceDataServer
6	Search for matching ALOG files	ls < ApplicationName >.ALOG.*
7	Copy a specific ALOG file to alogxfr	EcUtCopyExec <alogfile> ~

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## 18. Data Distribution

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This section describes the procedures the Data Distribution Technician (DDT) can use when performing data distribution activities at the Distributed Active Archive Centers (DAACs). Data Distribution is a process of retrieving archived data and providing the data to users in response to the users' request. The primary functions provided to the DDT are monitoring and controlling of distribution requests. Data Distribution processing mainly consists of preparing requested data products for distribution on specified media or via the network and subsequently delivering or causing the delivery of data products to the requester.

In addition to preparing the data, packaging materials are generated automatically if the data is to be distributed on media, and read-me files if the data is to be distributed via the network. The packaging materials include the packing list, which shows all data files stored on the delivery media.

Data Distribution is facilitated through three mechanisms;

- Hard media distribution by tape (8mm or D3) or (in the future) CD-ROM.
- Electronic pull where the user is notified where to find data and is allowed to ftp it from a temporary ECS storage area.
- Electronic push is where the ECS system uses an ftp put command to push the data to a predefined location on the end-user's platform.

Of these three mechanisms, only the electronic push is subject to errors not associated with hardware/media or software faults. A push distribution might fail because the remote location was not available, or the disk capacity was insufficient.

Note: Data Distribution threshold, determined by the capacity of the media type, is set up during Custom Code installation using ECSASSIST GUI. These are tunable parameters that may be modified at any time to accommodate the capacity of each media type. See sections 4.1.11.2.1.4 – “ECSAssist Subsystem Manager's mkcfg file selection screen” and 4.1.11.2.1.5 - “ECSAssist Subsystem Manager's mkcfg screen” of the ECSASSIST documentation (609-CD-510-001), for more information relative to the process for setting of these parameters. In addition, please refer to the specific Installation Instructions associated with DDIST that are generated for each custom code release.

Table 18.1-1 identifies the different types of media used within the ECS system. Each cartridge is identified by means of a bar code label that shows the media number. As the system matures more information about the bar code label process will be available.

**Table 18.1-1. Distribution Media Types**

Media Type	Media Name	Media Purpose
8mm	8 Millimeter cartridges	Distribution
D3	D3 tape cartridge	Distribution
CD ROM		Distribution
Electronic Push	ftp "put"	Distribution
Electronic Pull	ftp "get"	Distribution

Section 18.1 describes Data Distribution Custom Software items. Section 18.2 describes the ECS Data Distribution Operator tool. Section 18.3 describes media operations. Section 18.4 describes how to prepare products for shipment. Section 18.5 describes the process for recovering from a data distribution failure.

## 18.1 Data Distribution Custom Software Items

The Data Distribution custom software items monitor and control processing for distribution requests. Data Distribution processing directs storage management software to place data for distribution in working storage and creates packing lists as needed. Storage management software is directed to copy data on to tape or ftp push data as required and send notifications as required. Data Distribution performs limited automatic error response by suspending requests when most errors are encountered. The following list defines the ECS Data Distribution custom software items:

1. EcDsDistributionServer - the server process that provides the control and coordination for data distribution through request processing.
2. EcDsDdistGui - the GUI process that allows operations to initiate, track, and manipulate distribution requests by utilizing input GUI controls and Sybase Database information.
3. Data Base - the Sybase database server process that contains the request list, updates the request configuration and provides the request configuration to GUI operations. Data Distribution shares a database with Storage Management.

## 18.2 ECS Data Distribution Operator Tool

The Data Distribution Operator Tool GUI is used to interface with the DDT. The GUI provides error conditions and status to DDT, and allows the DDT to set parameters and control operations. The **ECS Data Distribution Operator** tool has five tab widgets; **Distrib'n Requests**, **System Requests**, **Tape ID's**, **Packing List**, and **Event Logging**. The **Distrib'n Requests** screen (Section 18.2.1) provides the DDT the capability to monitor detailed information on data distribution request activities, control operations including suspending, canceling, and resuming requests, changing priorities on requests, and indicate shipping status. The other tabs provide functionality still **TBD**.

The Activity Checklist table that follows provides an overview of the Data Distribution Operator tool. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**)

provides a brief explanation of the task. Column four (**Section**) provides the Procedure (**P**) section number or Instruction (**I**) section number where details for performing the task can be found.

**Table 18.2-1. ECS Data Distribution Operator Tool - Activity Checklist**

Order	Role	Task	Section
1	DDT	Starting the Data Distribution Operator GUI	(P)18.2.1
2	DDT	Monitoring/Controlling Data Distribution Request	(P)18.2.2
3	DDT	Configuring Data Distribution Polling and Error Retry Rate	(P)18.2.3
4	DDT	Changing the Priority of Data Distribution Requests	(P)18.2.4
5	DDT	Suspending Data Distribution Requests	(P)18.2.5
6	DDT	Resuming Processing on a Suspended Data Distribution Request	(P)18.2.6
7	DDT	Canceling a Data Distribution Request	(P)18.2.7

### 18.2.1 Starting the Data Distribution Operator GUI

The Data Distribution Operator GUI provides operations personnel at a DAAC the capability to manage the distribution requests. The GUI is used to monitor data that has been retrieved from the File Storage Management System (FSMS) for distribution to users in response to their requests. Starting the Data Distribution Operator GUI in normal operations will be just a matter of clicking an icon that appears on your desktop. Because the desktop configurations have not been installed to date it will be necessary to follow the procedure described below.

- 1 Bring up the Data Distribution Operator GUI if the Data Distribution Operator GUI has not already been brought up. From a SUN workstation or X-Term NCD Terminal use secure shell to log into the Data Distribution Operator host. Enter `/tools/bin/ssh <hostname>` and press the return key. Example `/tools/bin/ssh g0dis02.gsfc.ecs.nasa.gov`
- 2 If prompted to do so, log into the Data Distribution Operator workstation using your user identifier and password by typing *YourUserID*, and then press **Return**.
  - A password prompt is displayed.
- 3 Enter *YourPassword* or *YourPassphrase* (as applicable), then press **Return**.
  - You are authenticated as yourself.
- 4 Set your display environment using the following command:  
`setenv DISPLAY <hostname:0.0>` and press the return key
- 5 Change directory to the Data Distribution GUI directory using the following command:  
`cd /usr/ecs/<mode>/CUSTOM/utilities` and press the return key
  - The mode will most likely be one of the following:

- OPS (for normal operations)
- TS2 (for site testing)

- 6 Start the Data Distribution Operator GUI using command:  
**EcDsDdistGuiStart <mode>** and press the return key
  - The **Data Distribution Operator** tool is opened.
  - The **Data Distribution - Track Activity** screen is displayed.

**Table 18.2-2. Starting Data Distribution Operator GUI - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	/tools/bin/ssh <hostname>	press Return
2	YourUserID (If prompted)	press Return
3	YourPassword or YourPassphrase	press Return
4	setenv DISPLAY <hostname:0.0>	press Return
5	cd /usr/ecs/<mode>/CUSTOM/utilities	press Return
6	EcDsDdistGuiStart <mode>	press Return

## 18.2.2 Monitoring/Controlling Data Distribution Requests

The DDT can determine if a distribution request has completed by viewing the entries in the ECS Data Distribution Operator GUI tool. The DDT can view data distribution requests, change the priority on a selected request, mark a selected request shipped, terminate a request, and filter on all or specific requests. Additionally the filter is by Request ID, Requester, or All Requests, Media Type, and State. Each data distribution request is displayed with the Request ID, Requester, Media type, # of Files, Total Size of the request in Mbytes, State, Ordered State, Priority, Submission Time, End Time, # Media, # Granule, Media # Completed, ESDT Type, Order ID, and Warm Start status.

The following procedure will display all data distribution requests currently in the system, select filter, and view a request by media type and state. Table 18.2-3 presents the steps required to monitor data distribution requests in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1 Click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running; if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.
  - The **Data Distribution Operator** tool is opened.
  - The **Data Distribution - Track Activity** screen is displayed.
- 2 Click on the GUI's **Distrib'n Requests** tab.
  - The **Data Distribution - Track Activity** window is displayed.

- Each entry displays the **Request ID, Requester, Media, # of Files, Total Size (Mbytes), State, Ordered State, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID, and Warm Start.**
- 3 Select **View** → **Filter** from the pull-down menu to view specific distribution requests by media type and/or state.
    - The **Distribution Filter Requests** dialog box is displayed.
    - The **Distribution Filter Requests** dialog box makes it possible to select specific distribution requests by request ID, requester, media type, or state, to be displayed in the **Data Distribution - Track Activity** window.
  - 4 Click the **8 mm** radio button under Media Type, followed by the **Apply** and **OK** buttons to view all requests for that media type.
    - The **Data Distribution - Track Activity** window will reappears with only the requests in the system for the 8 mm media type.
  - 5 Select **View** → **Filter** from the pull-down menu again to view specific distribution requests by state and media type.
    - The **Distribution Filter Requests** dialog box is displayed.
  - 6 Click the **8 mm** radio button under Media Type, followed by the **Apply** button, then click the **Pending** radio button under State, followed by the **Apply** button and the **OK** button to view all requests that are waiting for the 8 mm tape drive.
    - The **Data Distribution - Track Activity** window will reappears with the requests for the 8 mm media type in the “pending” state.
    - Make sure that the 8 mm tape library has sufficient tapes to handle the request in the system.
  - 7 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

**Table 18.2-3. Monitoring/Controlling Data Distribution Requests - Quick-Steps (1 of 2)**

Step	What to Enter or Select	Action to Take
1	Data Distribution Operator GUI icon	double Click
2	Distrib'n Requests tab	single Click
3	View → Filter	single Click
4	8 mm radio button	single Click
5	Apply button	single Click
6	OK button	single Click
7	Filter... button	single Click
8	8 mm radio button	single Click
9	Apply button	single Click

**Table 18.2-3. Monitoring/Controlling Data Distribution Requests - Quick-Steps (2 of 2)**

<b>Step</b>	<b>What to Enter or Select</b>	<b>Action to Take</b>
<b>1 0</b>	Pending radio button	single Click
<b>1 1</b>	Apply button	single Click
<b>1 2</b>	OK button	single Click
<b>1 3</b>	File → Exit	single Click and drag

### **18.2.3 Configuring Data Distribution Polling and Error Retry Rate**

The polling rate specifies how often (in seconds) the system updates the information displayed in the **Data Distribution - Track Activity** window. The **Data Distribution Operator GUI Options** menu provides the Data Distribution Technician with a means of switching the Data Distribution database polling function on or off. The technician can modify the DDist Polling Rate and the Error Retry Rate. The error retry rate specifies the amount of time (in seconds) that the system waits before trying to poll the Data Server after a failed attempt.

The following procedures for configuring data distribution polling and error retry rate starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Data Distribution - Track Activity** window on the **Distrib'n Requests** tab is being displayed. Table 18.2-4 presents the steps required to configure the Data Distribution polling rate in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1** Select **Options** → **Refresh Options** from the pull-down menu.
  - The **Refresh Options** dialog box is displayed.
- 2** Click on the **DDist Polling On** button, to change the DDist Polling state (from off to on or vice versa),
  - If the button does not have a check mark in it, clicking on it turns DDist Polling on.
  - If the button already has a check mark in it, clicking on it turns DDist Polling off.
- 3** Enter the desired value (in seconds) in the **DDist Polling Rate** field, to change the polling rate.
- 4** Enter the desired value (in seconds) in the **Error Retry Rate** field, to change the error retry rate.
- 5** Click on the **OK** button to apply the selections and dismiss the **Refresh Options** dialog box.

**Table 18.2-4. Configuring Data Distribution Polling and Error Retry Rate - Quick-Steps**

<b>Step</b>	<b>What to Enter or Select</b>	<b>Action to Take</b>
1	Options → Refresh Options	single Click
2	Ddist Polling On	single Click
3	Ddist Polling Rate value in seconds	press Return
4	Error Retry Rate value in seconds	press Return
5	OK	single Click

### 18.2.4 Changing the Priority of Data Distribution Requests

The DDT can change the priority of a selected data distribution request only after the request has been suspended. The priority of an active data distribution request can not be changed. Priority of a request can be changed by selecting the request of interest, then selecting the priority, and clicking on the “Apply” button in the Change Priority frame.

The following procedure will explain the Change Request Priority. The available priorities are Xpress, Vhigh, High, Normal, and Low. Table 18.2-5 presents the steps required to monitor data distribution requests in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1 Double click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running, if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.
  - The **Data Distribution Operator GUI** tool is opened.
  - The **Data Distribution - Track Activity** screen is displayed.
- 2 Click on the GUI’s **Distrib’n Requests** tab.
  - The **Data Distribution - Track Activity** window is displayed.
  - Each entry displays the **Request ID, Requester, Media, # of Files, Total Size (Mbytes), State, Ordered State, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID, and Warm Start.**
- 3 Select the desired request from the request list displayed in the **Data Distribution - Track Activity** window whose priority must be changed.
  - The request is highlighted.
- 4 Press the **Suspend** push button on the GUI before the request is marked as being shipped.
  - The action is successful if no error dialog appears.
  - The desired request’s state changes to “Suspend”.
  - A check mark will appear in the left hand column to show which request item was changed.
  - Verify that the desired request’s state has changed to “**Suspend**”.

- 5 Click and **hold** the **Change Priority** option button to display a menu of priorities, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.
  - The following priority codes are available:  
(**Xpress, Vhigh, High, Normal, Low**)
  - The desired request's priority changes to "High".
  - The action is successful if no error dialog appears.
  - A check mark will appear in the left hand column to show which request item was changed.
  
- 6 Press the **Apply** or **Refresh** button.
  - The data distribution list is updated with the most recent request list.
  - Verify that the desired request's priority has changed to "**High**".
  
- 7 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

**Table 18.2-5. Changing the Priority of Data Distribution Requests - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	Data Distribution Operator GUI icon	double Click
2	Distrib'n Requests tab	single Click
3	Request whose Priority is to change	single Click
4	Suspend push button	single Click
5	Change Priority push button	single Click and hold
6	Apply or Refresh push button	single Click
7	File → Exit	single Click and drag

### 18.2.5 Suspending Data Distribution Requests

Under certain circumstances it may be advisable to suspend the processing of a data distribution request and resume it at a later time. For example, if there is a very large request that is taking up resources and causing others requests to back up (especially requests from data processing that must be filled to allow processing to proceed). The processing of that request should be suspended until a time when there is less demand on data distribution. Data Distribution Requests can also be suspended when the data distribution threshold, that were set for each media type, has been exceeded. The DDT can suspend a selected request thus putting it on a hold queue until processing is later resumed. A request will automatically suspend if errors are encountered. Each DAAC will be responsible for identifying reasons to operationally suspend requests.

The following procedure will put an incoming data distribution request on the hold queue using the Suspend function. Table 18.2-6 presents the steps required to suspend a data distribution request in a condensed manner. If you are already familiar with the procedure, you may prefer to use the

quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1 Double click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running, if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.
  - The **Data Distribution Operator GUI** tool is opened.
  - The **Data Distribution - Track Activity** screen is displayed.
- 2 Click on the GUI's **Distrib'n Requests** tab.
  - The **Data Distribution - Track Activity** window is displayed.
  - Each entry displays the **Request ID, Requester, Media, # of Files, Total Size (Mbytes), State, Ordered State, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID, and Warm Start.**
- 3 Select the desired request from the request list displayed in the **Data Distribution - Track Activity** window whose state must be changed.
  - The request is highlighted.
- 4 Press the **Suspend** push button on the GUI before the request is marked as being shipped.
  - The action is successful if no error dialog appears.
  - The desired request's state changes to "Suspend."
  - A check mark will appear in the left hand column to show which request item was changed.
- 5 Press the **Refresh** push button.
  - The data distribution list is updated with the most recent request list.
  - Verify that the desired request's state has changed to "**Suspend.**"
- 6 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

**Table 18.2-6. Suspend a Request - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	Data Distribution Operator GUI icon	double Click
2	Distrib'n Requests tab	single Click
3	Request whose Status is to change	single Click
4	Suspend push button	single Click
5	Refresh push button	single Click
6	File → Exit	single Click and drag

## 18.2.6 Resuming Processing on a Suspended Data Distribution Request

The DDT can resume processing on a suspended request using the Resume function. The following procedure will restart the normal 18.2-7 presents the steps required to resume a data distribution request in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1 Click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running, if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.
  - The **Data Distribution Operator GUI** tool is opened.
  - The **Data Distribution - Track Activity** screen is displayed.
- 2 Click on the GUI's **Distrib'n Requests** tab.
  - The **Data Distribution - Track Activity** window is displayed.
  - Each entry displays the **Request ID, Requester, Media, # of Files, Total Size (Mbytes), State, Ordered State, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID, and Warm Start.**
- 3 Select the suspended request from the request list displayed in the **Data Distribution - Track Activity** window whose priority must be changed.
  - The request is highlighted.
- 4 Press the **Resume** push button on the GUI to resume processing of the request.
  - The action is successful if no error dialog appears.
  - The suspended request's state changes to "Resume."
  - A check mark will appear in the left hand column to show which request item was changed
- 5 Press the **Refresh** push button.
  - The data distribution list is updated with the most recent request list.
  - Verify that the desired request's state has changed to "**Resume.**"
- 6 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

**Table 18.2-7. Resuming Processing on a Suspended Data Distribution Request - Quick-Steps**

<b>Step</b>	<b>What to Enter or Select</b>	<b>Action to Take</b>
<b>1</b>	Data Distribution Operator GUI icon	double Click
<b>2</b>	Distrib'n Requests tab	single Click
<b>3</b>	Request whose Status is to change	single Click
<b>4</b>	Resume push button	single Click
<b>5</b>	Refresh push button	single Click
<b>6</b>	File → Exit	single Click and drag

### **18.2.7 Canceling a Data Distribution Request**

The DDT can cancel an incoming request using the Cancel function. The following procedure will cancel a data distribution request using the Cancel function. Table 18.2-8 presents the steps required to cancel a data distribution request in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1** Double click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running, if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.
  - The **Data Distribution Operator GUI** tool is opened.
  - The **Data Distribution - Track Activity** screen is displayed.
- 2** Click on the GUI's **Distrib'n Requests** tab.
  - The **Data Distribution - Track Activity** window is displayed.
  - Each entry displays the Request ID, Requester, Media, # of Files, Total Size (Mbytes), State, Ordered State, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID, and Warm Start.
- 3** Select the request you wish to cancel from the request list displayed in the **Data Distribution - Track Activity** window whose priority must be changed.
  - The request is highlighted.
- 4** Press the **Cancel** push button on the GUI to resume processing of the request.
  - The action is successful if no error dialog appears.
  - The highlighted request's state changes to "Cancel."
  - A check mark will appear in the left hand column to show which request item was changed
- 5** Press the **Refresh** push button.
  - The data distribution list is updated with the most recent request list.
  - Verify that the desired request's state has changed to "**Cancel.**"

- 6 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

**Table 18.2-8. Canceling a Data Distribution Request - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	Data Distribution Operator GUI icon	Double Click
2	Distrib'n Requests tab	Single Click
3	Request whose Status is to change	Single Click
4	Cancel push button	single Click
5	Refresh push button	single Click
6	File → Exit	single Click and drag

### 18.3 Physical Media Operations

This section describes how a DDT might perform media operations. Physical media operations functions such as loading and unloading tapes into distribution peripherals, mounting and dismounting tapes from distribution peripherals, handling distribution media tape faults, and labeling distribution media are discussed in the procedures that follow.

The Activity Checklist table that follows provides an overview of media operations. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

**Table 18.3-1. Media Operations - Activity Checklist**

Order	Role	Task	Section
1	DDT	Loading and Unloading Tapes	(P) 18.3.1
2	DDT	Correcting Tape Fault	(I) 18.3.2
3	DDT	Labeling Tape Cartridges	(I) 18.3.3

Detailed procedures for tasks performed by the DDT are provided in the sections that follow.

#### 18.3.1 Loading and Unloading Tapes

Loading and unloading tapes into the 8mm tape stackers is a manual process. It is recommended that the DDT check the stackers at the beginning of each shift and throughout the day to make sure tapes are available for the distribution process to write to when fulfilling hard media distribution requests. When the hard media distribution requests have completed by writing data to the 8mm tapes the distribution process will automatically unmount and deallocate the tape. Tapes can be removed and replaced individually without having to load or unload the entire stacker.

The procedure that follows explains how to load and unload the 8mm tape stackers. Table 18.3-2 presents the steps required to verify there are no 8mm requests in the system and to load and unload the 8mm tape stackers in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1 Double click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running, if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.
  - The Data Distribution Operator tool is opened.
  - The **Data Distribution - Track Activity** screen is displayed.
- 2 Click on the GUI's **Distrib'n Requests** tab.
  - The **Data Distribution - Track Activity** window is displayed.
  - Each entry displays the Request ID, Requester, Media, # of Files, Total Size (Mbytes), State, Ordered State, Priority, Submission Time, End Time, # of Media, # Granule, Media # Completed, ESDT, Order ID, and Warm Start.
- 3 Click on the **Refresh** button to update the data displayed on the screen.
  - The data distribution list is updated with the most recent request list.
- 4 Select **View** → **Filter** from the pull-down menu to view specific distribution requests by media type.
  - The **Filter Requests** dialog box is displayed.
- 5 Click the **8 mm** radio button, followed by the **Apply** and **OK** buttons to view all requests for that media type.
  - The **Data Distribution - Track Activity** screen will appear with only the requests in the system for 8mm tapes.
  - Check the state of all 8mm requests to make sure they are not active.
  - Status of the request displayed in the **State** column of the **Data Distribution Requests** list may be... (**Waiting for Shipment, Shipped, Suspended**).
  - Status of the request displayed in **State** column of the **Data Distribution Requests** list should **not** be.... (**Pending, Active, Staging or Transferring**).
  - Either wait until all 8mm distribution requests are in an inactive state or suspend all active 8mm data distribution requests using the procedure in section 18.2.5 **Suspending Data Distribution Requests**.
- 6 When there are no 8 mm distribution requests in the system, stop EXB-210 operation and open the door by turning the key in the key-lock of the EXB-210 8mm tape stacker to stop tape stacker unit operations. Wait for the tape stacker cartridge handling mechanism to finish the current operation and moves to the "park" position.
  - The doors interlock mechanism releases. Now open the front door.
- 7 Remove the cartridge holder by pulling out first from the top, and then the bottom.

- 8 Gently remove the tapes by pulling each one straight out from its slot.
- 9 Make sure that the write-protect switch on the replacement tapes are set correctly for the desired operation. Either **Read-Only** (write-protected) or **Writable**.
- 10 Hold the tapes so that the write protect switch is at the bottom, or toward the right. Insert the tape by pushing gently straight into a slot in the cartridge holder.
- 11 Replace the cartridge holder by inserting the two orientation features on the bottom of the holder into the bottom of the plate. Snap the holder into place by pressing on the top.
- 12 Close the door to start the process of resuming EXB-210 tape stacker operation.
- 13 Lock the door by turning the key in the key lock. After the door is closed, unit attention is returned to the data distribution server host.
- 14 If any 8mm distribution requests were suspended to allow stacker unloading/loading, resume distribution request processing using the procedure in section 18.2.6 **Resuming Processing on a Suspended Data Distribution Request**.
- 15 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

**Table 18.3-2. Loading and Unloading Tapes - Quick-Step Procedures**

<b>Step</b>	<b>What to Enter or Select</b>	<b>Action to Take</b>
1	Data Distribution Operator GUI icon	double Click
2	Distrib'n Request tab	single Click
3	View → Filter	single Click
4	8 mm radio button	single Click
5	Apply button	single Click
6	OK button	single Click
7	File → Exit	single Click and drag

### 18.3.2 Correcting Tape Faults

Tape faults may occur which prevent the writing to a specific tape but not the drive. When the system is unable to write to a specific drive the operator will be notified, and the system will restart the specific operation on a new tape.

Correcting a tape fault involves replacing the faulty tape cartridge. The procedure is identical to that for Loading and Unloading Tapes. What differs is the reason for replacing the tape; i.e., because the tape cartridge is faulty rather than full.

### 18.3.3 Labeling Tape Cartridges

The distribution process automatically creates media and shipping labels. Preprinted bar code labels will be purchased for the 8mm tape cartridges. When the 8mm tapes are delivered to the distribution area the tapes will be removed from their boxes and the DDT will affix bar coded labels to the area on the edge of the tape.

## 18.4 Product Shipment

Before products are packaged and shipped the contents of the hard media should be verified. The tapes should be read to make sure they are readable and the contents are correct matching their corresponding packing slips.

The Activity Checklist table that follows provides an overview of the product shipment process. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found. Column five (**Complete?**) is used as a checklist to keep track of which task steps have been completed.

**Table 18.4-1. Product Shipment - Activity Checklist**

Order	Role	Task	Section
1	DDT	Performing Quality Control of Hard Media	(P) 18.4.1
2	DDT	Packaging Hard Media Products for Shipment	(I) 18.4.2
3	DDT	Mark Hard Media for Shipment	(P) 18.4.3

Detailed procedures for tasks performed by the DDT are provided in the sections that follow.

### 18.4.1 Performing Quality Control of Hard Media

Each DAAC should individually evaluate their Quality Control needs and the impact to the overall throughput of distribution processing to achieve the proper balance of throughput against Quality Control processing requirements. Before products are packaged and shipped, the contents of the hard media should be verified. If possible, each media product should be read to ensure that the content meets the following conditions:

- Readable.
- Correct.
- Matches the corresponding packing list.

The procedure that follows identifies the steps required for performing Quality Control on tapes and other hard media. The procedure starts with the assumption that the DDT has logged into the ECS system and the proper desktop environment is being displayed.

- 1 Bring up the Storage Management Operator GUI if the Storage Management Operator GUI has not already been brought up. From a SUN workstation telnet into the Storage Management Operator host. Enter `/tools/bin/ssh <hostname>` and press the return key. Example `/tools/bin/ssh g0dis02`.
- 2 If prompted to do so, log into the Storage Management Operator workstation using your user identifier by typing *YourUserID*, and then press **Return**.
  - A password/passphrase prompt is displayed.
- 3 Enter *YourPassword* or *YourPassphrase* (as applicable) then press **Return**.
  - You are authenticated as yourself.
- 4 Set your terminal display environment using the following command:  
`setenv DISPLAY <hostname:0.0>` and press the return key
- 5 Change to the Storage Management Operator GUI directory using the following command:  
`cd /usr/ecs/<mode>/CUSTOM/utilities` and press the return key
- 6 Start the Storage Management Control GUI using command:  
`EcDsStStmgtGuiStart <mode>` and press the return key
  - The **Storage Management Control** GUI tool is opened.
  - The **Configuration Parameter Reporting** screen is displayed.
- 7 Click on the **Resource Schedule** tab.
  - The **Storage Management - Resource and Device Scheduling** screen is displayed.
  - From this screen make a drive or stacker available for Quality Control use.
  - Check the tape label to make sure that the drive or stacker that you want to reserve was not used to write the tape
- 8 **Steps to schedule the resources are TBD.**
- 9 Load the drive or stacker in accordance with the applicable loading and unloading procedure.
- 10 Mount the tapes.
- 11 List the contents of the tapes.
- 12 Compare the list of the tapes' contents with the packing list.
- 13 Dismount the tapes.
- 14 Unload the drive or stacker in accordance with the applicable loading/unloading procedure.
- 15 Use the storage management reservation mechanism to return the drive or stacker to normal use.

**Table 18.4-2. Performing Quality Control of Hard Media - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	/tools/bin/ssh <hostname>	press Return
2	YourUserID (if prompted)	press Return
3	YourPassword or YourPassphrase	press Return
4	setenv DISPLAY <hostname:0.0>	press Return
5	cd /usr/ecs/<mode>/CUSTOM/utilities	press Return
6	EcDsStStmgtGuiStart <mode>	press Return
7	Resource Schedule tab	single click

#### 18.4.2 Correcting Defective Tapes In Preparation For Shipment

#### 18.4.3 Packaging Hard Media Products for Shipment

After the distribution process has completed and the contents of the tapes have been verified, the DDT will package the request for shipping. All hard media data requests must be packaged and sent out to the requester. The procedure to follow is DAAC dependent. Each DAAC should follow procedures currently in place for V0 Operations.

#### 18.4.4 Mark Hard Media for Shipment

After the DDT completes the packaging process in preparation for shipping the media, he/she should use the DATA DISTRIBUTION OPERATOR GUI tool to mark the tapes for shipment. The DDT executes the DATA DISTRIBUTION OPERATOR GUI tool and goes to the Distrib'n Requests tab. A distribution request is selected from the list and can be marked shipped by activating the "Mark Shipped" push button. A request can only be successfully mark shipped when it is in the "Waiting for Shipment" state. An error dialog is displayed if the Data Distribution Server can not successfully execute the mark shipped operation. A request that has been successfully mark shipped changes its state to "Shipped."

Table 18.4-3 presents the steps required to perform the mark for shipment process. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running, if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.
  - The **Data Distribution Operator GUI** tool is opened.
  - The **Data Distribution - Track Activity** screen is displayed.
- 2 Select the "**Distrib'n Requests**" tab.
  - The **Data Distribution - Track Activity** window is displayed.
- 3 Select the desired request whose state must be changed from "**Waiting for Shipment.**"
  - The request is highlighted.

- 4 Press the **Mark Shipped** push button.
  - The action is successful if no error dialog appear with the message “DDIST Mark Shipped Failure.”
- 5 Press the **Refresh** push button.
  - The data distribution list is updated with the most recent request list.
- 6 Verify that the desired request’s state was changed from “**Waiting for Shipment**” to “**Shipped.**”
- 7 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

**Table 18.4-3. Mark Hard Media for Shipment - Quick-Steps**

Step	What to Enter or Select	Action to Take
1	Data Distribution Operator GUI icon	double Click
2	Distrib'n Requests tab	single Click
3	Request in “Waiting for Shipment” state	single Click
4	Mark Shipped push button	single Click
5	Refresh push button	single Click
6	File → Exit	single Click and drag

## 18.5 Recovery from a Data Distribution Failure

When a Data Distribution error occurs, there may be a requirement for action to recover from the error. Recovery actions may be made necessary by an invalid fault or other errors that result in a Data Distribution failure. When a fault (error) occurs, the following action occur:

- The processing of the Data Distribution request stops.
- A message is sent to the Data Distribution Technician with a brief description of the problem.

The Data Distribution Technician (DDT) may use the DDIST Monitor Control screen, the Data Distribution History Log (refer to the section on Data Distribution Status Monitoring) and/or the following log file (in the /usr/ecs/<mode>/CUSTOM/logs directory on the DDIST host machine) to review the failure event:

- DistributionServer.Alog (data distribution server .Alog)
- EcDsDdistGui.Alog
- EcDsSt8MMServer.Alog

In addition, it is possible to check the ECS Event Log (for events related to DDIST failure) using the ECS Event Log Browser tab on the Management Data Access (MDA) GUI.

This section contains some examples of faults that are likely to occur, describes the notifications provided, and proposes operator actions in response to each fault situation.

The Activity Checklist table that follows provides an overview of the Recovery from a Data Distribution failure process. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (**P**) section number or Instruction (**I**) section number where details for performing the task can be found.

**Table 18.5-1. Recovery from a Data Distribution Failure - Activity Checklist**

<b>Order</b>	<b>Role</b>	<b>Task</b>	<b>Section</b>
1	DDT	Troubleshooting a Data Distribution Failure	(P) 18.5.1
2	DDT	Recovering from Ddist Refresh Failure	(P) 18.5.2
3	DDT	Recovering from a Ddist Cancel Failure	(P) 18.5.3
4	DDT	Recovering from Ddist Set Priority Failure	(P) 18.5.4
5	DDT	Recovering from Ddist Suspend/Suspend A Failure	(P) 18.5.5
6	DDT	Recovering from Ddist Resume/Resume All Failure	(P) 18.5.6
7	DDT	Recovering from Ddist Mark Ship Failure	(P) 18.5.7
8	DDT	Checking Database Connections	(P) 18.5.8
9	DDT	Display Data Distribution Error Logs	(P) 18.5.9
10	DDT	Missing E-mail Notification Pre-Amble	(P) 18.5.10

### 18.5.1 Troubleshooting a Data Distribution Failure

When troubleshooting a Data Distribution failure, use the procedure that follows. The procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

Upon receipt of the operator alert, use the Data Distribution - Track Activity screen scroll bars as necessary to identify the faulty distribution request.

- When there is a data distribution failure, the system provides the following three responses:
  - Logs the error.
  - Alerts the Distribution Technician.

Review the information concerning the faulty distribution request.

If additional information is needed, open and read the appropriate log file in the `/usr/ecs/mode/CUSTOM/logs` directory on the distribution host machine.

- **DistributionServer.Alog (data distribution server .Alog)**
- **EcDsDdistGui.Alog**
- **EcDsSt8MMServer.Alog**

Perform the appropriate recovery procedure depending on the nature of the problem:

- **Recovering from Ddist Refresh Failure**
- **Recovering from a Ddist Cancel Failure.**

- **Recovering from Ddist Set Priority Failure.**
- **Recovering from Ddist Suspend/Suspend All Failure**
- **Recovering from Ddist Resume/Resume All Failure.**
- **Recovering from Ddist Mark Ship Failure.**
- **Checking Data Connections.**
- **Missing E-Mail Notification Pre-Amble**

### 18.5.2 Recovering from Ddist Refresh Failure

When the Data Distribution GUI encounters a communication loss with the Ddist Server a **Ddist Refresh Error** will occur during a requested GUI refresh. The Dialog Message GUI was not able to get a new request list from server. Consequently, if the GUI does not display data or if the display does not refresh there may not be activity within the system to report. The procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

- 1 Upon receipt of the operator alert, press the **Reconnect button** from the toolbar menu list to re-establish Ddist Server connection.
- 2 Review the Data Distribution (EcDsDdistGui.Alog) log for additional information.

### 18.5.3 Recovering from a Ddist Cancel Failure

The DDT can cancel an incoming request using the Cancel function. An error dialog will display a **Ddist Cancel Failure** if the Distribution Server (EcDsDistributionServer) is unavailable. This is a problem because the GUI receives a failure from a server but the request was not canceled. The procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

- 1 Upon receipt of the operator alert, verify that canceling the request is a valid operation in the current state (e.g., Not valid if the current state is “Shipped.”)
- 2 Press the Reconnect button from the toolbar menu list to re-establish Ddist Server connection.
- 3 If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up using HP OpenView.
- 4 After the Data Server is back on line, press the Reconnect button from the toolbar menu list to re-establish Ddist Server connection.
- 5 Click on the GUI’s **Distrib’n Requests** tab.
  - The **Data Distribution – Track Activity** window is displayed.
  - Each entry displays the Request ID, Requester, Media, # of Files, Total Size (Mbytes), State, Ordered Stated, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID, and Warm Start.
- 6 Select the request that produce the Ddist Cancel Failure error from the request list displayed in the Data Distribution – Track Activity window whose priority must be changed.
  - The request is highlighted.
- 7 Press the Cancel push button on the GUI to resume processing of the request.
  - The action is successful if no error dialog appears.
  - The highlighted request’s state has change to “**Cancel.**”

- 8 Press the Refresh push button.
  - The data distribution list is updated with the most recent request list.
  - Verify that the desired request's state has changed to **“Cancel.”**

#### 18.5.4 Recovering from Ddist Set Priority Failure

The DDT can change the priority of a selected data distribution request only after the request has been suspended. The priority of an active data distribution request can not be changed. Priority of a request can be changed by selecting the request of interest, then selecting the priority, and clicking on the **“Apply”** button in the Change Priority frame.

The Data Distribution GUI will display an error in the Operator Message window if there is a problem in changing the priority on a given request. A **Ddist Set Priority Failure** is due to possible communication failure (server down) with the Data Distribution Server (EcDsDistribution Server). The GUI has received failure from the server that the request set priority has failed. The procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

- 1 Upon receipt of the operator alert, Press the Reconnect button from the toolbar menu list to re-establish Ddist Server connection.
- 2 If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up using HP OpenView.
- 3 After the Data Server is back on line, press the Reconnect button from the toolbar menu list to re-establish Ddist Server connection.
- 4 If the Distribution Server is up, review the Data Distribution (**EcDsDdistGui.Alog**) log for the **Ddist Set Priority Failure** description and additional information.
- 5 Click on the GUI's **Distrib'n Requests** tab.
  - The **Data Distribution – Track Activity** window is displayed.
  - Each entry displays the Request ID, Requester, Media, # of Files, Total Size (Mbytes), State, Ordered Stated, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID, and Warm Start.
- 6 Press the **Refresh** push button.
  - The data distribution list is updated with the most recent request list.
- 7 Highlight the distribution request to be assigned a different priority from the request list displayed in the **Data Distribution – Track Activity** window.
  - The request is highlighted and should be in the suspended state.
  - If request is not in the suspended state, refer to outlined **18.2.5 Suspending Data Distribution Request**.
- 8 Select the new priority using the **“Change Priority”** button.
- 9 Click on the **“Apply”** button to implement the priority change.
  - The action is successful if no error dialog appears.

#### 18.5.5 Recovering from Ddist Suspend/Suspend All Failure

A Ddist Suspend/Suspend All failure may occur if there is a server failure when an attempt is made to suspend incoming data requests. Suspending data requests are only valid in staging, active, pending states. The Suspend All data requests only pertains to requests that have not been sent to

Ddist. The procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

- 1 Upon receipt of the operator alert, ensure that the necessary hosts and servers are “up”.
- 2 If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up using HP OpenView.
- 3 If the Distribution Server is up, review the Data Distribution (**EcDsDdistGui.Alog**) log for the **Ddist Suspend Failure** description and additional information.

### 18.5.6 Recovering from Ddist Resume/Resume All Failure

The Resume/Resume All Failure occurs if the database is unavailable to the Data Distribution Server. This procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

- 1 Upon receipt of the operator alert, ensure that the necessary hosts and servers are “up”.
- 2 If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up using HP OpenView.
- 3 If the Distribution Server is up, review the Data Distribution (**EcDsDdistGui.Alog**) log for the **Ddist Suspend Failure** description and additional information.

### 18.5.7 Recovering from Ddist Mark Shipped Failure

After the DDT completes the packaging process in preparation for shipping the media, he/she should use the Data Distribution Operator GUI tool to mark the tapes for shipment. An error dialog will display a **Ddist Mark Shipped Failure** if the Distribution Server (EcDsDistributionServer) is unavailable. This procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

- 1 Upon receipt of the operator alert, ensure that the necessary hosts and servers are “up”.
- 2 If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up using HP OpenView.
- 3 If the Distribution Server is up, review the Data Distribution (**EcDsDdistGui.Alog**) and Storage Management (**EcDsSt8MMServer.ALOG**) logs for the **Ddist Suspend Failure** description and additional information.

### 18.5.8 Checking Database Connections

The storage management and data distribution shared database is the repository of data concerning data distribution requests. If applications (including the Data Distribution Operator GUI) are unable to connect to the database, the data distribution request data cannot be retrieved or (in the case of the GUI) displayed. Consequently, if the GUI does not display data or if the display does not refresh, checking the database connections is a logical step in trying to isolate the problem. The procedure for checking database connections starts with the assumption that the operator has logged in to the ECS system.

- 1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host.
- 2 Type `cd /usr/ecs/MODE/CUSTOM/cfg` then press Return/Enter.
- 3 Type `view EcDsDistributionServer.CFG` then press Return/Enter.
  - Although this procedure has been written for the **view** command, any UNIX editor or visualizing command (e.g., **vi**, **pg**, **more**) can be used to review the log file.
- 4 Review the configuration file to identify the values for the following parameters:
  - **DBName**
  - **DBServer**
  - **DBMaxConnections**
- 5 Type `:q!` then press **Return/Enter** to quit the view application.
- 6 Log in to the APC Server (e.g., e0acg01, g0acg01, l0acg02, n0acg01) host as described in Steps 1 through 6 of the procedure for Launching the Data Distribution GUI.
  - APC Server (e.g., e0acg01, g0acg01, l0acg02, n0acg01) typically hosts Sybase for the storage management/data distribution shared database.
  - The DBServer identified in the Data Distribution configuration file includes the host name (e.g., g0acg01\_svr).
- 7 Type `isql-UserID -Password -SDBServer` then press **Return/Enter**.
- 8 Type `sp_who` at the 1> prompt then press **Return/Enter**.
- 9 Type `go` at the 2> prompt then press **Return/Enter**.

### 18.5.9 Display Data Distribution Error Logs

- 1 From a SUN workstation or X-Term NCD Terminal telnet into the Data Distribution Operator host. Enter `telnet <hostname>` and press the return key. Example: `telnet g0dis02.gsfc.nasa.gov`
- 2 Log into the Data Distribution Operator workstation using your user identifier and password by typing *YourUserID*, and then press Return.
  - A password prompt is displayed.
- 3 Log into the Data Distribution Operator workstation using your user identifier and password by typing *YourUserID*, and then press Return.
  - A password prompt is displayed.
- 4 Enter *YourPassword*, then press Return.
  - You are authenticated as yourself.
- 5 Set your display environment using the following command:  
`setenv DISPLAY <hostname:0.0>` and press the return key
- 6 Change directory to the Data Distribution GUI directory using the following command:  
`cd /usr/ecs/<mode>/CUSTOM/logs` and press the return key.
- 7 To display Data Distribution .Alog use the following command:  
`ls -la |grep .Alog` and press the return key.

### 18.5.10 Missing E-mail Notification Pre-Amble

E-mail notification preambles are expected to be in the preamble directory `"/CUSTOM/data/DSS/"`. If the file with the appropriate name is in this directory, then it will be included as the preamble of

the email. If the distribution server does not find the file with the appropriate name, then the email is sent without the preamble. Note that the server will log (in the ALOG and/or the Debug.log) the full file names of the preambles it would try to use. The file names for preambles of successful acquires are expected to be:

```
"EcDsDd" + mediaType + "EMSuccessPreamble.txt"
```

and for failure notifications:

```
"EcDsDd" + mediaType + "EMFailurePreamble.txt"
```

Note that "mediaType" must be "8MM", "D3", "FtpPull", or "FtpPush" (without the quotes, of course).

Please make backups if you plan to change the preambles. And if you can please do so in a way that others can tell where your backups are located (e.g. in a subdirectory named embackups under the preamble directory.)

You are not allowed to create a preamble with any plus (+) signs. Do not create preambles that contain a colon preceded by a keyword that has appeared or can appear in the server-constructed email body. Such keyword-colon constructs include: GRANULE:, ORDERID:, REQUESTID:, USERSTRING:, FINISHED:, MEDIATYPE:, FTPHOST:, FTPDIR:, MEDIAID:, UR:, ESDT:, FILENAME:, FILESIZE:, FTPHOST:, FTPDIR:, FTPEXPR: .

If a file from another operating system is being placed in the preamble directory, then please view it with more or vi. Make sure it looks OK (e.g. it is not one long line ).

# 19. User Services

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## 19.1 ECS User Account Management

All registered users of the ECS have a personal "user account" that is maintained within the ECS User Account database by the User Services Representative (US Rep). The account contains such information as the user's name, User ID, e-mail address, preferred shipping address, billing address, and other information regarding the user that is needed when processing user requests. This section provides a brief overview of the ECS User Account Management tool and gives a few examples of its use:

- Section 19.1.1 explains how to retrieve a user account to validate a user.
- Section 19.1.2 explains how to create a user account.
- Section 19.1.3 explains how to complete a user account from the Universal Resource Locator (URL) Registration.
- Section 19.1.4 explains how to edit/modify an existing account.
- Section 19.1.5 explains how to delete an account.
- Section 19.1.6 explains how to cancel/suspend an account.
- Section 19.1.7 explains how to change a user's password.

The Activity Checklist, Table 19.1-1, provides an overview of the User Verification process. Column one (Order) shows the order in which tasks should be accomplished. Column two (Role) lists the Role/Manager/Operator responsible for performing the task. Column three (Task) provides a brief explanation of the task. Column four (Section) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found. Column five (Complete?) is used as a checklist to keep track of which task steps have been completed.

**Table 19.1-1. ECS User Account Management - Activity Checklist**

Order	Role	Task	Section	Complete?
1	US Rep	Retrieve User Account/Validate User	(P) 19.1.1	
2	US Rep	Create a User Account	(P) 19.1.2	
3	US Rep	Account Creation from URL	(P) 19.1.3	
4	US Rep	Edit/Modify an Existing Account	(P) 19.1.4	
5	US Rep	Delete an ECS Account	(P) 19.1.5	
6	US Rep	Cancel/Suspend an ECS Account	(P) 19.1.6	
7	US Rep	Change an ECS User Password	(P) 19.1.7	

### 19.1.1 Retrieve User Account/Validate a User

When a user contacts the User Services Representative (US Rep) with any request, the user's account is retrieved. User account information can be used to validate the user and/or provide information that will be needed to process the user's request.

Use the following detailed procedures:

- 1) The ECS User Account Management tool is launched with the execution of several UNIX commands:
  - Open the command shell.
  - Type `xhost <remote_workstation_name>` and then press the Enter key.
  - At the UNIX shell prompt, type `setenv DISPLAY clientname:0.0` and then press the Enter key. (Note: for "clientname", use either the IP address or machine name.)
  - At the UNIX shell prompt type `/tools/bin/ssh hostname` (e.g., `l0mss21`), and then press the Enter key, to start the log-in to the MSS client server.
    - If you receive the following message, "Host key not found from the list of known hosts. Are you sure you want to continue connecting? (yes/no)", type yes.
    - If you have previously set up a secure shell pass-phrase and executed `sshremote`, a prompt to enter the passphrase for RSA key '`<user@localhost>`' will appear. Go to the next step.
    - If you have not previously set up a secure shell pass-phrase, skip the next step.
  - If the following message appears: "Enter passphrase for RSA key '`<user@localhost>`'", type your Passphrase and then press the Enter key. Skip the next step.
  - At the "`<user@remotehost>`'s password:" prompt, type your Password and then press the Enter key.
  - To change to the directory containing the utility scripts to start Account Management GUIs, type `cd /path` and then press the Enter key.
  - For path, use `/usr/ecs/mode/CUSTOM/utilities`, where mode will likely be TS1, TS2, or OPS.
  - Type `EcMsAcRegUserGUIStart mode`, where mode is TS1, TS2, or OPS (or other) as selected in the previous step.
  - The ECS User Account Management window is displayed.
  - The window shows two folders: "User Request", and "Profile Account".
- 2) Click the "Profile Account" folder tab.

- Folders and fields applicable to existing accounts are displayed.
- 3) Retrieve the user's profile information by entering search criteria in the "Find" field.
    - The "Find" field is located to the right of the Find button.
  - 4) Enter the Search Criteria, then press Return.
    - You can create a search by entering the user's Last Name, E-mail address, or user ID.
    - The scroll box displays a list of accounts that match the search criteria.
  - 5) Scroll through the accounts listed until the desired account is highlighted, then double click.
    - Six folders are displayed that contain detailed information about the selected account: Personal Information, Mailing Address, Shipping Address, Billing Address, Account Information, and DAR Information.
  - 6) Click on each folder you desire to display. The user account information that you need in order to validate the user is displayed.

### **19.1.2 Create a User Account**

The User Registration process begins when the requester contacts User Services to request data. This request may be by mail, phone, e-mail, fax, or a user walk-in. The US Rep can either provide the user with the URL for registration help procedures, or the US Rep can enter the registration information on behalf of the user. This section describes how the US Rep would register a user. Most of the information needed to register the user should be contained within the fax or E-mail message, but if more information is needed, the US Rep calls the user directly.

To register a user the US Rep uses the "User Request" folder of the ECS User Account Management tool. User information is entered into five subordinate folders: the "Personal Information" folder, the "Mailing Address" folder, the "Shipping Address" folder, the "Billing Address" folder, and the "Account Information" folder. The US Rep will normally enter the information into the five folders sequentially, then press the "Add Request" button. The "User Request" folder remains open throughout this process. If the US Rep is interrupted after the completion of two folders, he/she can press the "Add Request" button to save the two completed folders, but the remaining folders will have to be completed before an order can be placed. Sections 19.1.2.1 through 19.1.2.6 explain how to enter user information into the six folders when the information is entered sequentially. The "User Request" folder will remain open until the five folders have been completed. If you are already familiar with the procedures, you may prefer to use the quick-step table in Section 19.1.2.7 (Table 19.1-4).

The Activity Checklist, Table 19.1-2, provides an overview of the process used to create an ECS user account. Column one (Order) shows the order in which tasks should be accomplished. Column two (Role) lists the Role/Manager/Operator responsible for performing the task. Column three (Tasks) provides a brief explanation of the task. Column four (Section) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found. Column five (Complete?) is used as a checklist to track the completed task steps.

**Table 19.1-2. Create an ECS User Account - Activity Checklist**

Order	Role	Task	Section	Complete?
1	US Rep	Personal Information folder	(P) 19.1.2.1	
2	US Rep	Mailing Address Folder	(P) 19.1.2.2	
3	US Rep	Shipping Address Folder	(P) 19.1.2.3	
4	US Rep	Billing Address Folder	(P) 19.1.2.4	
5	US Rep	Account Information folder	(P) 19.1.2.5	
6	US Rep	DAR Information	(P) 19.1.2.6	

### 19.1.2.1 Use Secure Shell to Perform a Remote Log in to the Account Management Host at the SMC

Launch the **ECS User Account Management** application GUIs.

- The **ECS User Account Management** window is displayed.
- The window shows two folders: “**Request Account**,” and “**Profile Account**.”

Click the “**Request Account**” folder tab.

- The window displays five folders.

Click the “**Account Information**” folder.

- The “**Account Information**” folder opens.

Click on the “**Expiration Date**” field.

- The cursor moves to the “**Expiration Date**” field.

Enter the **Expiration Date** only if required by the DAAC for new accounts, then press **Tab**.

- The cursor moves to the “**DCE Group**” field.

Click on the pull-down arrow next to the “**Privilege Level**” field.

- A pull-down menu appears with choices of **XPRESS**, **VHigh**, **HIGH**, **NORMAL**, and **LOW**.

Click on the choice **NORMAL**.

- **NORMAL** appears in the “**Privilege Level**” field.

Click on the pull-down arrow next to the “**NASA User**” field.

- A pull-down menu appears with choices of **Privileged**, **Regular**, and **Non-NASA**.

Click on the choice **Non-NASA**.

- **Non-NASA** appears in the “**NASA User**” field.

Click on the pull-down arrow next to the “**V0 Gateway Category**” field.

- A pull-down menu appears with the choices of **USA** and **Non-USA**.

Click on the choice **USA**.

- **USA** appears in the “**V0 Gateway Category**” field.

If the user is to be authorized for ASTER L1B requests, click on the check box next to **Authorize for ASTER L1B**.

- A check mark is displayed in the box.
- The **Account Information** folder is complete; go to next folder.

### 19.1.2.2 Personal Information

The "Personal Information" folder contains the user name, e-mail address, organization, telephone number, mother's maiden name, affiliation, project, home DAAC, and primary area of study. The user may need to be contacted in order to obtain all the information needed. The US Rep uses this information when validating a user at a later date. The "User Request" folder is still open. To add the user's personal information, execute the following steps:

- 1) Click the "Personal Information" folder.
  - The "Personal Information" folder opens.
  - The cursor defaults to the "Title" field.
- 2) Enter the user's Title, then press Tab.
  - The title you have chosen appears in the "Title" field.
  - The cursor moves to the "First Name" field.
  - A dropdown menu may also be used :
    - a) Point the mouse on the arrow to the right of the "Title" field.
    - b) While holding the mouse down, highlight the Title you require.

- c) Release the mouse button.
- 3) Enter the user's first name, then press Tab.
    - The cursor moves to the "MI" field.
  - 4) Enter the user's middle initial, then press Tab.
    - The cursor moves to the "Last Name" field.
  - 5) Enter the user's last name, then press Tab.
    - The cursor moves to the "last name" field.
  - 6) Enter the user's Email address, then press Tab.
    - The cursor moves to the "User ID" field.
  - 7) Enter the User ID, then press Tab.
    - The cursor moves to the "Organization" field.
  - 8) Enter the user's organization, then press Tab.
    - The cursor moves to the "Affiliation" field.
  - 9) deleted
    - 10) deleted
  - 11) Enter the user's affiliation, then press Tab.
    - A dropdown menu may also be used:
      - a) Point the mouse on the arrow at the right of the "Affiliation" field.
      - b) While holding the mouse button down, highlight the affiliation required.
      - c) Release the mouse button.
    - The highlighted affiliation appears in the "Affiliation" field.
    - The cursor moves to the "User verification field" field.
  - 12) Click on the "**User Verification Key:**" field.
    - The cursor moves to the "**User Verification Key:**" field.
    - Enter the user's **User Verification Key:**, then press **Tab**.
    - The cursor moves to the pull-down arrow next to the "**Home DAAC:**" field.

13) Enter the user's Home DAAC, then press Tab.

- A dropdown menu can also be used to select the Home DAAC.
  - a) Point the mouse on the arrow to the right of the "Home DAAC" field.
  - b) While holding the mouse button down, highlight the "Home DAAC."
  - c) Release the mouse button.
    - The highlighted DAAC appears in the "Home DAAC" field.

13.5) Click on the Project field.

- The cursor moves to the Project field.
- Enter the Project and press tab.
- The cursor moves to the "Primary Area of Study" field.

14) Enter the user's Primary Area of Study, then press Tab.

- A dropdown menu can also be used to select the Primary Area of Study.
  - a) Point the mouse on the arrow to the right of the "Primary Area of Study" field.
  - b) While holding the mouse button down, highlight the "Primary Area of Study."
  - c) Release the mouse button.
- The highlighted Area of Study appears in the "Primary Area of Study" field.
- The Personal Information folder is complete.
- deleted

### **19.1.2.3 Mailing Address**

The "Mailing Address" is used for normal correspondence. The Mailing Address is not necessarily the same as the shipping or billing addresses. The US Rep is responsible for maintaining up-to-date mailing addresses.

The "User Request" folder is still open. Locate and open the "Mailing Address" folder. To add the Mailing Address, execute the following steps:

- 1) Click the "Mailing Address" folder tab.
  - The "Mailing Address" folder opens.
  - The cursor moves to the first "Address" field.
- 2) Enter the user's mailing address, then press Tab.

- The cursor moves to the second "Address" field.
- 3) If a second address field is needed to complete the user's mailing address, enter the mailing address, then press Tab.
    - If a second address is not needed, press Tab to bypass the field.
    - The cursor moves to the "City" field.
  - 4) Enter the City to which regular correspondence is sent, then press Tab.
    - The cursor moves to the "State/Province" field.
  - 5) Enter the State or Province for the mailing address, then press Tab.
    - The cursor moves to the "Zip/Postal Code" field.
  - 6) Enter the Zip/Postal Code for the mailing address, then press Tab.
    - The cursor moves to the "Country" field.
  - 7) Enter the Country for the mailing address, then press Tab.
    - The cursor moves to the "Telephone" field.
  - 8) Enter the Telephone number (area code first) used at the mailing address, then press Tab.
    - The cursor moves to the "Fax" field.
  - 9) Enter the Fax number (area code first) used at the mailing address, then press Tab.
    - The "Mailing Address" folder is now complete.

#### **19.1.2.4 Shipping Address**

The "Shipping Address" folder contains the address for shipping data. The Shipping Address is not necessarily the same as the mailing or billing addresses. The US Rep will always confirm the shipping address with the user before shipping data.

The "User Request" folder is still open. Locate and open the "Shipping Address" folder. To add the shipping address, execute the following steps:

- 1) Click the "Shipping Address" folder tab.
  - The "Shipping Address" folder opens.
  - The cursor moves to the first "Address" field.
- 2) Enter the user's Shipping Address, then press Tab.
  - The cursor moves to the second "Address" field.

- 3) If a second address field is needed to complete the user's Shipping Address, enter the Shipping Address, then press Tab.
  - If a second address field is not needed, press Tab to bypass the field.
  - The cursor moves to the "City" field.
- 4) Enter the City to which the data will be shipped, then press Tab.
  - The cursor moves to the "State/Province" field.
- 5) Enter the State or Province for the shipping address, then press Tab.
  - The cursor moves to the "Zip/Postal Code" field.
- 6) Enter the Zip/Postal Code for the shipping address, then press Tab.
  - The cursor moves to the "Country" field.
- 7) Enter the Country to which the data will be shipped, then press Tab.
  - The cursor moves to the "Telephone" field.
- 8) Enter the Telephone number (area code first) used at the shipping address, then press Tab.
  - The cursor moves to the "Fax" field.
- 9) Enter the Fax number (area code first) used at the shipping address, then press Tab.
  - The "Shipping Address" folder is now complete.
  - Open the "Billing Address" folder.

#### **19.1.2.5 Billing Address**

The "Billing Address" is the address to which payment-due billings are sent. The billing address is not necessarily the same as the mailing and shipping addresses. The US Rep is responsible for maintaining up-to-date billing addresses.

The "User Request" folder is still open. Locate and open the "Billing Address" folder. To add the billing address, execute the following steps:

- 1) Click the "Billing Address" folder tab.
  - The "Billing Address" folder opens.
  - The cursor moves to the first "Address" field.
- 2) Enter the user's Billing Address, then press Tab.
  - The cursor moves to the second "Address" field.

- 3) If a second address field is needed to complete the user's billing address, enter the Billing Address, then press Tab.
  - If the second address field is not needed, press Tab to bypass the field.
  - The cursor moves to the "City" field.
- 4) Enter the City to which the payment-due billings will be sent, then press Tab.
  - The cursor moves to the "State/Province" field.
- 5) Enter the State or Province for the billing address, then press Tab.
  - The cursor moves to the "Zip/Postal Code" field.
- 6) Enter the Zip/Postal Code for the billing address, then press Tab.
  - The cursor moves to the "Country" field.
- 7) Enter the Country to which the payment due billings will be sent, then press Tab.
  - The cursor moves to the "Telephone" field.
- 8) Enter the Telephone number (area code first) used at the billing address, then press Tab.
  - The cursor moves to the "Fax" field.
- 9) Enter the Fax number (area code first) used at the billing address, then press Tab.
  - The "Billing Address" folder is now complete.
  - Open the "Account Information" folder.

#### **19.1.2.6 Account Information**

The "Account Information" folder contains the date the account was created, , expiration date, Account Number, privilege level, NASA User, DCE password, DCE group , DCE Organization, V0 Gateway User Type, and V0 Gateway Password. There are no privilege restrictions until SeaWiFS data are available; the restriction levels will be determined at that time. The system deletes an account when the Expiration Date has been reached. One week prior to the expiration date, an e-mail message is sent to the user and US Rep saying the account will be deleted on the expiration date. This date is ordinarily used when an account is placed on restriction due to non-payment of bills. To enter Account Information, execute the following steps:

- 1) The ECS User Account Management tool is launched with the execution of several UNIX commands:
  - Open the command shell.
  - Type `xhost <remote_workstation_name>` and then press the Enter key.

- At the UNIX shell prompt, type `setenv DISPLAY clientname:0.0` and then press the Enter key. (Note: for "clientname", use either the IP address or machine name.)
- At the UNIX shell prompt type `/tools/bin/ssh hostname` (e.g., `10mss21`), and then press the Enter key, to start the log-in to the MSS client server.
  - If you receive the following message, "Host key not found from the list of known hosts. Are you sure you want to continue connecting? (yes/no)", type yes.
  - If you have previously set up a secure shell pass-phrase and executed `sshremote`, a prompt to enter the passphrase for RSA key '`<user@localhost>`' will appear. Go to the next step.

If you have not previously set up a secure shell pass-phrase, skip the next step.

- If the following message appears: "Enter passphrase for RSA key '`<user@localhost>`'", type your Passphrase and then press the Enter key. Skip the next step.
  - At the "`<user@remotehost>`'s password:" prompt, type your Password and then press the Enter key.
  - To change to the directory containing the utility scripts to start Account Management GUIs, type `cd /path` and then press the Enter key.
  - For path, use `/usr/ecs/mode/CUSTOM/utilities`, where mode will likely be TS1, TS2, or OPS.
  - Type `EcMsAcRegUserGUIStart mode`, where mode is TS1, TS2, or OPS (or other) as selected in the previous step.
  - The ECS User Account Management window is displayed.
  - The window shows two folders: "User Request" and "Profile Account".
- 2) Click the "User Request" folder tab.
    - Six folders are displayed that contain detailed information about the selected user's account: Personal Information, Mailing Address, Shipping Address, Billing Address, Account Information and DAR Information.
  - 3) Click the "Account Information" folder.
    - The "Account Information" folder opens.
  - 4) Click the "Expiration Date" field.
    - The cursor moves to the "Expiration Date" field.
  - 5) Enter the Expiration Date only if required by the DAAC for new accounts, then press Tab.

- When the Expiration Date is reached, the system automatically deletes the account from the system.
  - The expiration date depends on the policies at each DAAC.
- 6) Click on the "Account Number" field. Enter a new Account Number, then press Tab.
- DAAC policy will determine how new account numbers are assigned.
- 7) Click on the "Privilege Level" field. Enter the Privilege Level, then press Tab..
- A dropdown menu can also be used to select the Privilege Level.
    - a) Point the mouse on the arrow to the right of the "Privilege Level" field.
    - b) While holding the mouse button down, highlight the "Privilege Level."
    - c) Release the mouse button.
  - The highlighted Privilege Level appears in the "Privilege Level" field.
  - The DAACs listed in the dropdown menu are high, medium and low.
- 8) Click on the "NASA User" field. Enter "Yes" or "No" for the NASA User, then press Tab..
- A dropdown menu can also be used to select the NASA User.
    - a) Point the mouse on the arrow to the right of the "NASA User" field.
    - b) While holding the mouse button down, highlight the desired Option.
    - c) Release the mouse button.
  - The highlighted NASA User option appears in the "NASA User" field.
  - The options listed in the dropdown menu are Yes and No.
- 9) Click on the "DCE Password" field. Enter a new password, then press Tab.
- DAAC policy will determine how DCE passwords are assigned.
- 10) Click on the "DCE Group" field. Enter a DCE Group, then press Tab..
- DAAC policy will determine how users are assigned to DCE groups.
- 11) Click on the "DCE Organization" field. Enter the DCE Organization, then press Tab..
- The DCE Organization must be the one which corresponds to the selected DCE Group.
  - If the user needs access to the V0 Gateway, enter V0 Gateway User Type and V0 Gateway Password.

- 12) Click on the "V0 Gateway User Type" field. Enter the V0 Gateway User Type, then press Tab..
- 13) Click on the "V0 Gateway Password" field. Enter the V0 Gateway Password, then press Tab.
  - The six folders are now complete.
  - The Account Information folder is complete.

### 19.1.2.7 DAR Information

The "DAR Information" folder contains an indication of user privileges for expedited requests and Aster categories. To enter DAR Information, execute the following steps:

- 1) The ECS User Account Management tool is launched with the execution of several UNIX commands:
  - Open the command shell.
  - Type `xhost <remote_workstation_name>` and then press the Enter key.
  - At the UNIX shell prompt, type `setenv DISPLAY clientname:0.0` and then press the Enter key. (Note: for "clientname", use either the IP address or machine name.)
  - At the UNIX shell prompt type `/tools/bin/ssh hostname` (e.g., `l0mss21`), and then press the Enter key, to start the log-in to the MSS client server.
  - If you receive the following message, "Host key not found from the list of known hosts. Are you sure you want to continue connecting? (yes/no)", type `yes`.
  - If you have previously set up a secure shell pass-phrase and executed `sshremote`, a prompt to enter the passphrase for RSA key '`<user@localhost>`' will appear. Go to the next step.
  - If you have not previously set up a secure shell pass-phrase, skip the next step.
  - If the following message appears: "Enter passphrase for RSA key '`<user@localhost>`'", type your Passphrase and then press the Enter key. Skip the next step.
  - At the "`<user@remotehost>`'s password:" prompt, type your Password and then press the Enter key.
  - To change to the directory containing the utility scripts to start Account Management GUIs, type `cd /path` and then press the Enter key.
  - For path, use `/usr/ecs/mode/CUSTOM/utilities`, where mode will likely be TS1, TS2, or OPS.

- Type EcMsAcRegUserGUIStart mode, where mode is TS1, TS2, or OPS (or other) as selected in the previous step.
  - The ECS User Account Management window is displayed.
  - The window shows two folders: "User Request" and "Profile Account".
- 2) Click the "Profile Account" folder tab.
  - 3) Click the "DAR Information" folder.
    - The "DAR Information" folder opens.
  - 4) Click the "DAR Expedited Data" field.
    - The cursor moves to the "DAR Expedited Data" field. Enter "Yes" or "No" for the DAR Expedited Data, then press Tab.
    - A dropdown menu can also be used to select the DAR Expedited Data.
      - a) Point the mouse on the arrow to the right of the "DAR Expedited Data" field.
      - b) While holding the mouse button down, highlight the desired Option.
      - c) Release the mouse button.
    - The highlighted DAR Expedited Data option appears in "DAR Expedited Data" field.
    - The options listed in the dropdown menu are Yes and No.
  - 5) Click on the "Aster Category" field. Enter an Aster Category, then press Tab.
    - A dropdown menu can also be used to select the Aster Category.
      - a) Point the mouse on the arrow to the right of the "Aster Category" field.
      - b) While holding the mouse button down, highlight the desired Option.
      - c) Release the mouse button.
    - The highlighted Aster Category option appears in "Aster Category" field.
    - The five folders are now complete.
  - 6) Click the "Create Account" button to complete the creation of the new account.
    - The account is automatically logged into the database as an approved account.
  - 7) Exit menu path File\_Exit
  - 8) Provide the user with his/her initial ECS account password.
    - Follow local DAAC policy regarding password dissemination.

### 19.1.3 Create a User Account

Once the five folders are complete, the next step in creation of the new account is achieved with selection of a button at the bottom of the Request Account screen. This action logs the account into the database as a pending account. Finally, to complete the creation of a new account, the pending account is selected and a click on the Create Account button results in the creation of the new account. It also results in automatic dispatch of an e-mail message to the user's e-mail address with notification that the account has been created. The User Services representative will complete the account registration process by providing the user with the initial ECS account password. The password dissemination is done in accordance with local DAAC policy.

- 1) Use secure shell to perform a remote log in to the Account Management host at the SMC.
  - The ECS User Account Management window is displayed.
  - The window shows two folders: "User Request" and "Profile Account".
- 2) Launch the **ECS User Account Management** application GUIs.
  - The **ECS User Account Management** window is displayed.
  - The window shows two folders: "**Request Account,**" and "**Profile Account.**"
- 3) Click the "**Request Account**" folder tab.
  - The window displays five folders.
  - Above the five folders are the search criteria:  
Sort by: "**Submission Date,**" or "**Last Name.**  
Retrieve by: "**Pending**" or "**Approved,**" "**Denied**" or "**All.**"
- 4) Click the **Pending** button.
- 5) Click the **Retrieve** button.
  - The scroll box displays all the URL registration forms completed by the requesters that are still pending.
- 6) Highlight one account (in this case, for Dr. Paul Fingerman) and double click to display the account.
  - The user registration information is automatically transferred into the five user folders.
- 7) Click the "**Personal Information**" folder.
  - The "Personal Information" folder is opened.
  - View the folder to verify that the information is complete.
  - If the information is not complete, contact the user, then complete the folder.

- 8) Click the “**Account Information**” folder.
  - The “**Account Information**” folder is opened.
  - View the folder to verify that the information is complete.
  - If the information is not complete, contact the user, then complete the folder.
- 9) Click the “**Shipping Address**” folder.
  - The “**Shipping Address**” folder is opened.
  - View the folder to verify that the information is complete.
  - If the information is not complete, contact the user, then complete the folder.
- 10) Click the “**Billing Address**” folder.
  - The “**Billing Address**” folder is opened.
  - View the folder to verify that the information is complete.
  - If the information is not complete, contact the user, then complete the folder.
- 11) Click the “**Mailing Address**” folder.
  - The “**Mailing Address**” folder is opened.
  - View the folder to verify that the information is complete.
  - If the information is not complete, contact the user, then complete the folder.
- 12) If the information is complete, click the “**Create Account**” button.
  - A **Create Account** dialog box is displayed, requesting the operator to **Choose one: DCE login and Profile Database Entry** or **Profile Database Entry**.
- 13) Click on the option button to the left of **Profile Database Entry**.
  - The selected option button is filled to indicate its selection.
- 14) Click on the **OK** button in the dialog box.
  - The account is created; the entry moves from the pending list to the approved list.
  - A print dialog box is displayed.
- 15) Click in the **Printer** field and type **lp -d <printername>**.
  - The typed entry is displayed in the **Printer** field.
- 16) Click on the **OK** button in the dialog box.

- The print dialog box is closed and a confirmation letter form with user information is printed on the designated printer.

### 19.1.4 Edit/Modify an Existing Account

The US Rep has the responsibility of maintaining the ECS user accounts. Part of this responsibility is to stay in close contact with the user to ensure that the records containing the user's shipping and billing addresses, as well as the remainder of the information maintained in the user account folders, are up-to-date. There are six folders containing information about the user. The six folders are maintained in the ECS User Account Management tool. Three of the folders contain addresses: Mailing Address, Shipping Address, and Billing Address. All the addresses can be the same; however, some companies may have different addresses for accounts receivable, regular correspondence, and the shipment of data. When an address change requested by a user does not indicate which address folder to change, the US Rep must contact the user for this information. The US Rep may have reviewed the previous address folders and noticed that the three folders contained the same previous address; however, do not assume that the same circumstances apply now. Always contact the user to make sure. The remaining three folders contain "Personal Information," "Account Information" and "DAR Information." The "Profile Account" folder, which is located in the ECS User Account Management tool, is used for all editing and modifications.

The Activity Checklist, Table 19.1-3, provides an overview of the process used to edit/modify an existing ECS account. Column one (Order) shows the order in which tasks should be accomplished. Column two (Role) lists the Role/Manager/Operator responsible for performing the task. Column three (Tasks) provides a brief explanation of the task. Column four (Section) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found. Column five (Complete?) is used as a checklist to keep track of which task steps have been completed.

**Table 19.1-3. Edit/Modify and Existing Account - Activity Checklist**

	Role	Task	Section	Complete?
1	US Rep	Edit/Modify Mailing Address	(P) 19.1.4.2	
2	US Rep	Edit/Modify Shipping Address	(P) 19.1.4.3	
3	US Rep	Edit/Modify Billing Address	(P) 19.1.4.4	
4	US Rep	Edit/Modify Account Information	(P) 19.1.4.5	
5	US Rep	Edit/Modify DAR Information	(P) 19.1.4.6	

Sections 19.1.4.1 through 19.1.4.5 explain how to edit information in the five folders. In the following examples, the US Rep receives a notice from the user indicating that the Shipping, Billing and Mailing addresses have changed, as well as the E-mail address, the DCE Password and Aster category. The following sections explain how the US Rep retrieves a user account, then changes the address in three folders (in this example the same address is used in all the address

folders), and also changes the e-mail Address, the Primary Area of Study, the V0 Gateway User Type and Aster category in three other folders.

#### 19.1.4.1 Edit/Modify Mailing Address

The "Mailing Address" is used for normal correspondence. The Mailing Address is not necessarily the same as the shipping or billing addresses. Execute the following steps to edit/modify the "Mailing Address" folder. If the "Profile Account" folder of the ECS User Account Management icon remains open and the user's account is still displayed, skip steps 1 through 5; otherwise, begin with step 1 to execute the changes.

- 1) Use secure shell to perform a remote log in to the Account Management host at the SMC.
  - Launch the **ECS User Account Management** application GUIs.
  - The **ECS User Account Management** window is displayed.
  - The window shows two folders: "**Request Account**," and "**Profile Account**."
- 2) Click the "**Profile Account**" folder tab.
  - Folders and fields applicable to existing accounts are displayed.
- 3) Retrieve the user's profile information by entering the search criteria (in this case, **Scientist**) in the "**Find**" field and then pressing **Return**.
  - The "**Find**" field is located to the right of the **Find** button.
  - Enter the user's **Last Name**, **E-mail address**, or **User ID** to create the search.
  - The scroll box displays a list of accounts which match the search criteria.
- 4) Scroll through the accounts listed until the desired account is **highlighted**, then double click.
  - Six folders are displayed that contain detailed information about the selected account: **Account Information**, **Personal Information**, **Shipping Address**, **Billing Address**, **Mailing Address**, and **DAR Information**.
- 5) Click the "**Mailing Address**" folder.
  - The "Shipping Address" folder opens.
  - The cursor moves to the first "Address" field.
- 6) Enter the user's new **Mailing Address**, then press **Tab**.

- The cursor moves to the second “**Address**” field.
  - Because this completes the edit for the only part of the address that changed, there is no need to make any additional changes in this folder.
- 7) Click the “**Apply Edits**” button to implement the change to the “**Mailing Address**” folder.

#### 19.1.4.2 Edit/Modify Shipping Address

The "Shipping Address" folder contains the address for shipping data. This address is not necessarily the same as the mailing or billing addresses. The US Rep will always confirm the shipping address with the user before shipping data. Execute the following steps to edit/modify the "Shipping Address" folder. If the "Profile Account" folder of the ECS User Account Management icon is still open and the user's account is still displayed, skip steps 1 through 4; otherwise, begin with step 1 to execute your changes.

- 1) Use secure shell to perform a remote log in to the Account Management host at the SMC.
  - Launch the **ECS User Account Management** application GUIs.
  - The **ECS User Account Management** window is displayed.
  - The window shows two folders: “**Request Account,**” and “**Profile Account.**”
- 2) Click the “**Profile Account**” folder tab.
  - Folders and fields applicable to existing accounts are displayed.
- 3) Retrieve the user’s profile information by entering the search criteria (in this case, **Scientist**) in the “**Find**” field and then pressing **Return**.
  - The “**Find**” field is located to the right of the **Find** button.
  - Enter the user’s **Last Name, E-mail address, or User ID** to create the search.
  - The scroll box displays a list of accounts which match the search criteria.
- 4) Scroll through the accounts listed until the desired account is **highlighted**, then double click.
  - Six folders are displayed that contain detailed information about the selected account: **Account Information, Personal Information, Shipping Address, Billing Address, Mailing Address, and DAR Information.**
- 5) Click the “**Shipping Address**” folder.
  - The “Shipping Address” folder opens.
  - The cursor moves to the first “Address” field.
- 6) Enter the user’s new **Shipping Address**, then press **Tab**.

- The cursor moves to the second “**Address**” field.
  - Because this completes the edit for the only part of the address that changed, there is no need to make any additional changes in this folder.
- 7) Click the “**Apply Edits**” button to implement the change to the “**Shipping Address**” folder.

### 19.1.4.3 Edit/Modify Billing Address

The "Billing Address" is not necessarily the same as the mailing and shipping addresses. This is the address to which payment-due billings are sent. The US Rep is responsible for maintaining up-to-date billing addresses. You must execute the following steps to edit/modify the "Billing Address" folder. If the "Profile Account" folder of the ECS User Account Management icon remains open and the user's account is still displayed, skip steps 1 through 5; otherwise, begin with step 1 to execute your changes.

- 1) Use secure shell to perform a remote log in to the Account Management host at the SMC.
  - Launch the **ECS User Account Management** application GUIs.
  - The **ECS User Account Management** window is displayed.
  - The window shows two folders: “**Request Account,**” and “**Profile Account.**”
- 2) Click the “**Profile Account**” folder tab.
  - Folders and fields applicable to existing accounts are displayed.
- 3) Retrieve the user’s profile information by entering the search criteria in the “**Find**” field and then pressing **Return**.
  - The “**Find**” field is located to the right of the **Find** button.
  - Enter the user’s **Last Name, E-mail address, or User ID** to create the search.
  - The scroll box displays a list of accounts which match the search criteria.
- 4) Scroll through the accounts listed until the desired account is **highlighted**, then double click.
  - Six folders are displayed that contain detailed information about the selected account: **Account Information, Personal Information, Shipping Address, Billing Address, Mailing Address, and DAR Information.**
- 5) Click the “**Billing Address**” folder.
  - The “Billing Address” folder opens.
  - The cursor moves to the first “Address” field.
- 6) Enter the user’s new **Billing Address**, then press **Tab**.

- The cursor moves to the second “**Address**” field.
  - Because this completes the edit for the only part of the address that changed, there is no need to make any additional changes in this folder.
- 7) Click the “**Apply Edits**” button to implement the change to the “**Billing Address**” folder.

#### 19.1.4.4 Edit/Modify Account Information

The "Account Information" folder contains the date the account was created, expiration date, Account Number, privilege level, NASA User, DCE password, DCE group, DCE Organization, V0 Gateway User Type, and V0 Gateway Password. The following steps are required to change the V0 Gateway User Type. If the "Profile Account" folder of the ECS User Account Management icon is still open and the user's account is still displayed, skip steps 1 through 5; otherwise, begin with step 1 to execute your changes.

- 1) Use secure shell to perform a remote log in to the Account Management host at the SMC.
- 2) Launch the **ECS User Account Management** application GUIs.
  - The **ECS User Account Management** window is displayed.
  - The window shows two folders: “**Request Account,**” and “**Profile Account.**”
- 3) Click the “**Profile Account**” folder tab.
  - Folders and fields applicable to existing accounts are displayed.
- 4) Retrieve the user’s profile information by entering the search criteria in the “**Find**” field and then pressing **Return**.
  - The “**Find**” field is located to the right of the **Find** button.
  - Enter the user’s **Last Name, E-mail address, or User ID** to create the search.
  - The scroll box displays a list of accounts which match the search criteria.
- 5) Scroll through the accounts listed until the desired account is **highlighted**, then double click.
  - Six folders are displayed that contain detailed information about the selected account: **Account Information, Personal Information, Shipping Address, Billing Address, Mailing Address, and DAR Information.**
- 6) Click the “**Personal Information**” folder.
  - The “**Personal Information**” folder is displayed.
- 7) Click the “**Telephone**” field.
  - The cursor moves to the “**Telephone**” field.

- 8) Enter the new **telephone number**, then press **Tab**.
  - All changes for this folder have been completed.
- 9) Click the “**Apply Edits**” button to implement the change to the “**Personal Information**” folder.

#### 19.1.4.5 Edit/Modify DAR Information

The "DAR Information" folder contains an indication of user privileges for expedited requests and Aster categories. Execute the following steps to change the Aster Category on an existing account.

- 1) The ECS User Account Management tool is launched with the execution of several UNIX commands:
  - Open the command shell.
  - Type `xhost <remote_workstation_name>` and then press the Enter key.
  - At the UNIX shell prompt, type `setenv DISPLAY clientname:0.0` and then press the Enter key. (Note: for "clientname", use either the IP address or machine name.)
  - At the UNIX shell prompt type `/tools/bin/ssh hostname` (e.g., `l0mss21`), and then press the Enter key, to start the log-in to the MSS client server.
    - If you receive the following message, "Host key not found from the list of known hosts. Are you sure you want to continue connecting? (yes/no)", type yes.
    - If you have previously set up a secure shell pass-phrase and executed `sshremote`, a prompt to enter the passphrase for RSA key '`<user@localhost>`' will appear. Go to the next step.
    - If you have not previously set up a secure shell pass-phrase, skip the next step.
  - If the following message appears: "Enter passphrase for RSA key '`<user@localhost>`'", type your Passphrase and then press the Enter key. Skip the next step.
  - At the "`<user@remotehost>`'s password:" prompt, type your Password and then press the Enter key.
  - To change to the directory containing the utility scripts to start Account Management GUIs, type `cd /path` and then press the Enter key.
  - For path, use `/usr/ecs/mode/CUSTOM/utilities`, where mode will likely be TS1, TS2, or OPS.
  - Type `EcMsAcRegUserGUIStart mode`, where mode is TS1, TS2, or OPS (or other) as selected in the previous step.
  - The ECS User Account Management window is displayed.

- The window shows two folders: "User Request" and "Profile Account".
- 2) Click the "Profile Account" folder tab.
    - Folders and fields applicable to existing accounts are displayed.
  - 3) Retrieve the user's profile information by entering the search criteria in the "Find" field.
    - The "Find" field is located to the right of the Find button.
  - 4) Enter the Search Criteria, then press Return.
    - The scroll box displays a list of accounts which match the search criteria.
    - Create a search by entering the user's Last Name, E-mail address, or User ID.
  - 5) Scroll through the listed accounts until the desired account is highlighted, then double Click.
    - Six folders are displayed that contain detailed information about the selected user's account; Personal Information, Mailing Address, Shipping Address, Billing Address, and Account Information.
  - 6) Click the "DAR Information" folder.
    - The "DAR Information" folder opens.
  - 7) Click the "Aster Category" field.
    - The cursor moves to the Aster Category.
  - 8) Enter the Aster Category, then press Tab.
  - 9) Click the "Apply Edits" button to implement the changes to the "DAR Information" folder.
    - Click another folder to continue editing, or
    - Exit ECS User Account Management by:  
Exit menu path File\_Exit.

### **19.1.5 Deleting an ECS Account**

An ECS user can be deleted from the ECS database through the ECS User Account Management tool. When the US Rep receives instructions to delete a user, he/she will retrieve the user's account, validate the account scheduled for deletion, then complete the deletion. The Personal Information folder is generally the folder used to validate an account because it has the most information about the user, such as Name, Title, E-mail address, Organization, Telephone Number, etc.

- 1) Use secure shell to perform a remote log in to the Account Management host at the SMC.
- 2) Launch the **ECS User Account Management** application GUIs.

- The **ECS User Account Management** window is displayed.
  - The window shows two folders: “**Request Account,**” and “**Profile Account.**”
- 3) Click the “**Profile Account**” folder tab.
    - Folders and fields applicable to existing accounts are displayed.
  - 4) Retrieve the user’s profile information by entering the search criteria (in this case, **Scientist**) in the “**Find**” field and then pressing **Return**.
    - The “**Find**” field is located to the right of the **Find** button.
    - Enter the user’s **Last Name, E-mail address, or User ID** to create the search.
    - The scroll box displays a list of accounts that match the search criteria.
  - 5) Scroll through the accounts listed until the desired account (for **Phyllis Scientist**) is **highlighted**, then double click.
    - Six folders are displayed that contain detailed information about the selected account: **Account Information, Personal Information, Shipping Address, Billing Address, Mailing Address, and DAR Information.**
  - 6) Click the “**Personal Information**” folder.
    - The “Personal Information” folder opens.
    - View the folder to validate the account scheduled for deletion.
  - 7) Click the “**Delete Account**” button.
    - The account is deleted.

### 19.1.6 Canceling an ECS Account

When the US Rep receives instructions to suspend a user's privileges, he/she will retrieve the user's account through the Profile Account folder of the ECS User Account Management icon. The US Rep must first review the account information to validate the account scheduled for suspension. The Personal Information folder has the most information about the user, such as Name, Title, E-mail address, Organization, Telephone Number, etc.; therefore, the Personal Information folder is the folder generally used to validate an account. The suspension of an account is ordinarily due to a non payment of some type, such as payment due for services previously rendered. The US Rep will send the user an E-mail or letter, informing the user that the account privileges have been temporarily suspended and the account will be deleted if the payment has not been received by a specified date.

If you are already familiar with the procedures to Cancel/Suspend an ECS Account, you may prefer to use the quick-step table below (Table 19.1-9). If you are new to the system or have not performed this task recently, you should use the following detailed procedures:

- 1) Use secure shell to perform a remote log in to the Account Management host at the SMC.
- 2) Launch the **ECS User Account Management** application GUIs.
  - The **ECS User Account Management** window is displayed.
  - The window shows two folders: “**Request Account**,” and “**Profile Account**.”
- 3) Click the “**Profile Account**” folder tab.
  - Folders and fields applicable to existing accounts are displayed.
- 4) Retrieve the user’s profile information by entering the search criteria (in this case, **Fingerman**) in the “**Find**” field and then pressing **Return**.
  - The “**Find**” field is located to the right of the **Find** button.
  - Enter the user’s **Last Name**, **E-mail address**, or **User ID** to create the search.
  - The scroll box displays a list of accounts which match the search criteria.
- 5) Scroll through the accounts listed until the desired account (for **Paul Fingerman**) is **highlighted**, then **double click**.
  - Six folders are displayed that contain detailed information about the selected account: **Account Information**, **Personal Information**, **Shipping Address**, **Billing Address**, **Mailing Address**, and **DAR Information**.
- 6) Click the “Personal Information” folder tab.
  - The “Personal Information” folder opens.
  - View the folder to validate the account scheduled for cancellation.
- 7) Click the “Account Information” folder tab.
  - The “**Account Information**” folder opens.
- 8) Click the “Expiration Date” field.
  - The cursor moves to the “**Expiration Date**” field.
- 9) Enter the **Expiration Date** (in this case, one month from the current date), then press **Tab**.
  - When the expiration date is reached, the system automatically deletes the account from the system.
- 10) Click the **Apply Edit** button.
  - An expiration date is established for the privileges on this account.
  - The sanction on the account privileges can be rescinded at any time up until the expiration date has been reached.

- The sanction can be rescinded by removing the expiration date.

Canceling an account suspends the user's access until further notice. At the time that the user's privileges are suspended, the US Rep must enter an Expiration date. If the account is not reinstated before the expiration date, it will be deleted from the system.

### 19.1.7 Changing an ECS User's Password

The user has notified the US Rep that he/she has forgotten his/her password. The US Rep uses the "Profile Account" folder of the ECS User Account Management tool to change a password. The US Rep retrieves the user's account, then reviews the information contained in the folders to validate the user. The "Personal Information" folder is generally the folder used to validate a user because it contains information about the user, such as name, title, e-mail address, organization, telephone number, etc. The US Rep would then issue a new password to the user. The user would be informed that it is a "one time" password only; therefore, the user must change the password the first time he/she enters the system.

- 1) Use secure shell to perform a remote log in to the Account Management host at the SMC.
- 2) Launch the **ECS User Account Management** application GUIs.
  - The **ECS User Account Management** window is displayed.
  - The window shows two folders: "**Request Account,**" and "**Profile Account.**"
- 3) Click the **Profile Account** folder tab.
  - Folders and fields applicable to existing accounts are displayed.
- 4) Retrieve the user's profile information by entering the search criteria (in this case, **Fingerman**) in the "**Find**" field and then pressing **Return**.
  - The "**Find**" field is located to the right of the **Find** button.
  - Enter the user's **Last Name, E-mail address, or User ID** to create the search.
  - The scroll box displays a list of accounts that match the search criteria.
- 5) Scroll through the accounts listed until the desired account (for **Paul Fingerman**) is reached, then click on the account listing.
  - Six folders are displayed that contain detailed information about the selected account: **Account Information, Personal Information, Shipping Address, Billing Address, Mailing Address, and DAR Information.**
- 6) Click the **Personal Information** folder tab.
  - The **Personal Information** folder opens.
  - View the folder to verify the user requesting the password change.

- 7) Click the **Account Information** folder tab.
  - The **Account Information** folder opens.
- 8) Click the Change V0GW Password button.
  - A **Change V0 Gateway Password** dialog is displayed.
- 9) Click in the **V0 Gateway Password** field in the dialog.
  - The cursor moves to the “**V0 Gateway Password**” field.
- 10) Enter **V0Passw**, noting carefully what you enter, then press **OK**.
  - Inform the user of the new password, with instructions to change the password when next entering the system.
- 11) Click the **Apply Edits** button to implement the change to the **Account Information** folder.

## 19.2 Processing an Order

This section describes how a User Services Representative (US Rep) might process an order from a user. The specific order of activities may vary from what is suggested here due to Operator preference or local DAAC policy; however, the procedures themselves will be the same for any order processed.

In the example provided here, when the user contacts the US Rep with a request for data, the US Rep logs the request in the User Contact Log (Section 19.2.1), then launches the ECS User Account Management tool to validate the user (Section 19.2.2). Next, the US Rep uses the Search and Order tool to locate the requested data (Section 19.2.3). Once the data is located, the US Rep obtains a price estimate, if applicable (Section 19.2.4) and confirms the order with the user. After the user has approved the order, the US Rep places the order (Section 19.2.5), then notifies the user that the order is being processed. The US Rep then completes the process by updating the User Contact Log record to indicate that the order has been placed (Section 19.2.6).

The Activity Checklist, Table 19.2-1, provides an overview of the process used when an order for data is received. Column One (Order) shows the order in which task should be accomplished. Column two (Role) lists the Role/Manager/Operator responsible for performing the task. Column three (Task) provides a brief explanation of the task. Column four (Section) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found. Column five (Complete?) is used as a checklist to keep track of which task steps have been completed.

**Table 19.2-1. Processing an Order - Activity Checklist**

Order	Role	Task	Section	Complete?
1	US Rep	Create a User Contact Log Record	(P) 19.2.1	
2	US Rep	Retrieve User Information	(P) 19.2.2	
3	US Rep	Locate Data via Search & Order tool	(P) 19.2.3	
4	US Rep	Request Price Estimate/Confirm Order	(P) 19.2.4	
5	US Rep	Specify Order Details	(P) 19.2.5	
6	US Rep	Update User Contact Log	(P) 19.2.6	

### **19.2.1 Create a User Contact Log Record**

A User Contact Log record is created for each unique User Services event. An "event" can be a registration request, a request for data, a request to track the status of an order, a complaint, a comment, or other. If a user contacts the US Rep for any reason, the US Rep must log the contact into the User Contact Log. The User Contact Log, which is located on the User Services Desktop, is kept as a running record of all user interactions. The US Rep uses the User Contact Log so frequently that, once it is launched, it is likely to be kept open during an entire shift/working session.

A unique "Log-Id" is assigned to each User Contact Log record. Once the record has been created, if the US Rep wants to add new information to the record or review previous entries, he/she can retrieve the record by using the Log-Id. The record continues to be updated to show a chronology of activities relating to the event, until such time as the event is closed out. Once closed, the record can be retrieved for historical purposes, but new information cannot be added. How long closed records stay on the system is determined by a combination of system capacity and DAAC policy.

In the User Contact Log, the person who contacted User Services is referred to as the "Contact." A log entry contains the Contact's name, phone number, E-mail address, Home DAAC, and Organization. Other window fields include the Contact Method, Receiving Operator, and Received Time. The User Contact Log also contains Short and Long description fields for recording the contact's reasons for placing the call. To create a User Contact Log the "Bolded" fields must be completed. Local DAAC policy will determine which of the remaining fields are to be completed. The window also contains fields that permit the US Rep to initiate a trouble ticket, if a trouble ticket is required. Trouble tickets are not discussed in this section; therefore, fields that relate only to trouble tickets will not be used in this procedure. For information about trouble tickets, refer to Section 8 of this document, "Problem Management."

There are four User Contact Log screens: the "Submit" screen, the "Display" screen, the "Edit" screen, and the "Entry" Screen. The Submit screen is used to create new User Contact Log records, the Display screen is used to display already existing Contact Log records and to generate reports, the Edit screen is used to make changes to existing User Contact Log records, and the Entry screen is used as a path to the previous screens. When the User Contact Log is opened, it defaults to the Entry screen. An existing record can be displayed or modified by entering its unique Log-ID then using the menu at the top of the screen and following menu path Query \_\_\_Display or Modify

Individual. It is also possible to enter new account information into the Entry screen, but the information must be transferred to the Submit screen before the log record can be created. This is accomplished by using the menu at the top of the screen and following menu path **Action \_ Copy to Submit**.

Although it is fairly easy to copy information from the Entry screen to the Submit screen, it is recommended that the Submit screen always be used when creating new records in order to leave the Entry screen available for other activities. If the US Rep receives a phone call regarding a different activity while in the middle of creating a new User Contact Log record, he/she can switch to the Entry screen and query the Log for information about the other situation without disturbing the data already entered into the Submit screen. As long as the Entry screen remains available, it can be used as a pathway for opening several Submit screens or Edit screens at one time. When the US Rep has finished with the other activity, he/she can return to the Submit screen and finish creating the new log record.

### 19.2.1.1 How to Create a User Contact Log Record

The procedure that follows explains how to create a User Contact Log. This procedure will assume that all of the "Contact" information is needed.

- 1 Access the command shell
  - The command shell prompt is displayed.
- 2 At the UNIX command shell prompt, type **setenv DISPLAY *clientname*:0.0** and then press the **Return/Enter** key.
  - For *clientname*, use either the local terminal/workstation IP address or its machine name.
- 3 Start the log-in to the MSS client server by typing **/tools/bin/ssh *hostname*** (e.g., 10msh03) at the UNIX command shell prompt, and then press the **Return/Enter** key.
  - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** ("y" alone does not work).
  - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 4.
  - If you have not previously set up a secure shell passphrase; go to Step 5.
- 4 If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your **Passphrase** and then press the **Return/Enter** key. Go to Step 6.

- 5 At the `<user@remotehost>`'s **password:** prompt, type your *Password* and then press the **Return/Enter** key.
- 6 To change to the directory containing the Remedy application, type **cd /path** and then press the **Return/Enter** key.
  - For *path*, use **/usr/ecs/OPS/COTS/remedy/bin**.
- 7 Type **aruser &** to launch Remedy.
  - Remedy Action Request System Window is displayed, showing default to **Trouble Ticket** screen.
- 8 Follow menu path **File**→**Open Schema**.
  - The **Open Schema** dialog box is displayed, showing four choices: **RelB-Contact Log**, **RelB-TT-ForwardToSite**, **RelB-TroubleTickets**, and **TroubleTicket-Xfer**.
- 9 Click on **RelB-Contact Log** to highlight it and then click on the **Apply** button.
  - The **User Contact Log** defaults to the **Entry** screen.
- 10 From the Menu Bar, follow menu path **File** → **Open Submit**.
  - The display changes from the **Entry** to the **Submit** screen.
  - The screens look the same except for the action buttons on the bottom of the screen.
- 11 Click on the “Contact Method” field.
- 12 Enter the **Contact Method** (optional).
  - A drop-down menu may also be used:
    - a Point the mouse on the arrow to the right of the **Contact Method** field.
    - b While holding the mouse pointer button down, **highlight** the **Contact Method** you require (in this case, “**Fax**”).
    - c **Release** the mouse button.
      - The highlighted affiliation appears in the “ **Contact Method**” field.
      - The Titles in the drop-down box are “**Phone**,” “**E-mail**,” “**Fax**,” “**US Mail**,” and “**Walk-in**.”

**14** Click on the **Short Description** field.

- The **Short Description** field is 128 characters long.
- A **Query** field at the bottom of the main Trouble Ticket screen may be used to locate existing User Contact Log records and/or Trouble Tickets associated with specific problems/subjects. When a search string is entered into the **Query** field, it is the **Short Description** field of individual records that is searched. Therefore, when you enter a short description, enter it with “search criteria” in mind.

**15** Enter the **Short Description** (required).

**16** Click on the **Set Received Time** button (optional).

- The current time is displayed in the **Received Time** field.

**17** Click on the **Long Description** field.

- The **Long Description** field is used when the description requires more detail than the **Short Description** field will allow.
- The **Long Description** field is often used when a problem exists: it can help with the resolution of Trouble Tickets.

**18** Enter a **Long Description** if needed (optional).

**19** Click on the **Contact Id** field.

**20** Enter the **Id** (User ID) of the person who contacted User Services.

- The **Contact Id** is not required unless a Trouble Ticket is being created from the User Contact Log.

**21** If a **Contact Id** was entered at **Step 12**, click the **Set Contact Information** button and then go to **Step 32**; otherwise, move to **Step 22**.

- The system will automatically complete the **Contact Name**, **Contact Phone**, **Contact E-mail**, **Contact Home DAAC**, and **Contact Organization** fields, if the **Contact Id** has been entered.
- If the contact is not a registered Remedy user, the contact fields must be manually completed.

**22** If the contact information was not automatically entered at **Step 12**, click on **Contact Name**.

**23** Enter the **Contact's Name** (optional).

**24** Click on the **Contact Phone** field.

**25** Enter the **Contact's Phone** number (optional).

**26** Click on the **Contact E-mail** field.

- 27 Enter the **Contact's E-mail address** (optional).
- 28 Click on the **Contact Home DAAC** field.
- 29 Enter the **Contact's Home DAAC** (optional).
- 30 Click on the **Contact Organization** field.
- 31 Enter the **Contact's Organization** (optional).
- 32 When all contact information has been entered, click on the **Receiving Operator** field.
- 33 In the **Receiving Operator** field, enter the name of the operator (User Services Representative) who is creating the User Contact Log record.
- 34 Click on the **Category** field.
- 35 Enter the **Category**.
  - A drop-down menu may also be used:
    - a Point the mouse on the arrow to the right of the **Category** field.
    - b While holding the mouse pointer button down, **highlight** the **Category** you require (in this case, **Order**).
    - c **Release** the mouse button.
      - The highlighted category appears in the **Category** field.
  - The Titles in the drop-down box are **Suggestion, Complaint, Concern, Order, and Subscription**.
- 36 Click the **Apply** button.
  - If you are not using the **Submit** screen, you must transfer to the submit screen now. The information you entered must be moved to the **Submit** screen before the log record can be created. This is accomplished by using the menu at the top of the screen and following menu path **Actions** → **Copy to Submit**. Once the information has been transferred to the **Submit** screen, click the **Apply** button.
  - The User Contact Log record is created and submitted to the database.
  - A unique Id is generated for the record and entered into the **Log Id** field.
  - The time and date that the User Contact Log was completed are displayed in the **Entered Time** field.

**37** Click the **Clear** button.

- The screen is cleared without closing the User Contact Log.
- A new User Contact Log record can now be created.

#### **NOTES:**

**Note 1:** The US Rep can use the "**Query**" field located at the bottom of the screen to locate existing User Contact Log records and/or Trouble Tickets associated with specific problems/subjects. When a search string is entered into the "**Query**" field, it is the "**Short Description**" field of individual records that is searched. Therefore, when you enter a short description, enter it with "search criteria" in mind.

### **19.2.2 Retrieve User Information**

This section describes how a User Services Representative (US Rep) might retrieve a User's Profile to validate a user. When a User places a call to the US Rep, the event is logged into the User Contact Log. The US Rep then retrieves the User's profile to validate the user. The User's Profile screen contains all the vital information about the user. The User's Profile is located in the ECS User Account Management tool, which is located on the User Services Desktop.

The information needed from the User may vary depending on local DAAC policies. It is recommended that the US Rep verify the following fields in the event that additional information is needed to complete the order: User Id; Name; Shipping Address for mailing hard media; Email Address for an ftp pull; Privilege Level, if ordering restricted data; and a Contact Phone Number. When the User Profile screen is opened, the information contained in the six account management folders is displayed on one screen. If modifications are required, see Section 19.1.4.

- 1) The ECS User Account Management tool is launched with the execution of several UNIX commands:
  - Open the command shell.
  - Type `xhost <remote_workstation_name>` and then press the Enter key.
  - At the UNIX shell prompt, type `setenv DISPLAY clientname:0.0` and then press the Enter key. (Note: for "clientname", use either the IP address or machine name.)
  - At the UNIX shell prompt type `/tools/bin/ssh hostname` (e.g., `l0mss21`), and then press the Enter key, to start the log-in to the MSS client server.
    - If you receive the following message, "Host key not found from the list of known hosts. Are you sure you want to continue connecting? (yes/no)", type yes.
    - If you have previously set up a secure shell pass-phrase and executed `sshremote`, a prompt to enter the passphrase for RSA key '`<user@localhost>`' will appear. Go to the next step.
    - If you have not previously set up a secure shell pass-phrase, skip the next step.

- If the following message appears: "Enter passphrase for RSA key '<user@localhost>', type your Passphrase and then press the Enter key. Skip the next step.
  - At the "<user@remotehost>'s password:" prompt, type your Password and then press the Enter key.
  - To change to the directory containing the utility scripts to start Account Management GUIs, type cd /path and then press the Enter key.
  - For path, use /usr/ecs/mode/CUSTOM/utilities, where mode will likely be TS1, TS2, or OPS.
  - Type EcMsAcRegUserGUIStart mode, where mode is TS1, TS2, or OPS (or other) as selected in the previous step.
  - The ECS User Account Management window is displayed.
  - The window shows two folders: "User Request" and "Profile Account".
- 2) Click the "Profile Account" folder tab.
    - Folders and fields applicable to existing accounts are displayed.
  - 3) Retrieve the user's profile information by entering a search criteria in the "Find" field.
    - The "Find" field is located to the right of the Find button.
  - 4) Enter the Search Criteria, then press Return.
    - The scroll box displays a list of accounts that match the search criteria.
    - You can create a search by entering the user's Last Name, E-mail address, or User Id.
  - 5) Scroll through the accounts listed until the desired account is highlighted, then double click.
    - Six folders are displayed that contain detailed information about the selected account: Personal Information, Mailing Address, Shipping Address, Billing Address, Account Information and DAR Information,.
  - 6) Click on the "View Entire Profile" option button at the bottom of the screen.
    - The User Profile screen is displayed.
    - This is a read-only screen; no changes can be made without going to each individual folder.
    - The User Profile screen, displays the information contained in the Personal Information folder, Account Information folder, Shipping Address folder, Billing Address folder, and the Mailing Address folder.
  - 7) Click the Close button, to exit from the User Profile screen.

8) Exit the ECS User Account Management tool by following menu path File \_\_Exit.

### 19.2.3 Locate Data Via Search and Order Tool

When a User Services Representative (US Rep) receives a mail message from a user who needs help placing an order, he/she can place the order on the user's behalf. This section provides an example of how the US Rep might place an order on behalf of a user. The US Rep begins by creating a **User Contact Log** (Section 19.2.1) entry, into which he/she records that a request for help was received from the user. The US Rep next looks up the requester's **User Profile** (Section 19.2.2) to verify that the person is a registered user. After looking at the mail message from the user, the US Rep decides to create a search to determine if the data is held at his/her home DAAC. The US Rep launches the EOS Data Gateway (URL: <http://lyta.gsfc.nasa.gov/~imswww/pub/imswelcome/>.)

**Table 19.2-2. Locate Data Via EOS Data Gateway - Activity Checklist**

Order	Role	Task	Complete ?
1	US Rep	Obtain a Spatial Summary	
2	US Rep	Obtain a Temporal Summary	
3	US Rep	Obtain a Discrete Attribute Summary	
4	US Rep	Browse the Search Results	
5	US Rep	Select Granules to Order	
6	US Rep	Request Price Estimate	
7	US Rep	Specify Order Details	

### 19.2.4 Request Price Estimate

There is no charge for data at this time. If the time ever comes that NASA resources cannot meet the user demand, a standard price table shall be established across all DAACs, see (Policy #96.01). In general, the policy provides that the Federal Government should recoup only those costs associated with the dissemination of information and not those associated with its creation or collection. NASA Headquarters is responsible for specifying the policy with input from GSFC Code 170, the EOSDIS Project, and the DAACs.

When and if NASA begins charging to recoup their costs, the DAAC User Service Representative (US Rep) will be responsible for direct interaction with users regarding pricing, billing, refunds, or any other matter regarding data costs. The DAAC User Services Representatives will be able to establish single accounts, or group accounts in which a number of users are allowed to charge a common account.

For more information regarding the **Pricing and Billing Policy** see "Data and Information Policy," published in the 1995 MTPE/EOS Reference Handbook , EOS Project Plan (5/95).

### **19.2.5 Specify Order Details**

Once data has been marked for order, the media and format options must be selected. Select the Package Options button on the Order Data screen to display the Media Type and Media Format options screen. Each Processing Option has associated Media types and corresponding Media Format choices. Detailed instructions for selecting the media type can be found in the B0SOT Client Tutorial and the EOSDIS Users Manual, (located by the following URL: <http://eos.nasa.gov/imswelcome>).

### **19.2.6 Update User Contact Log**

When a User contacts the US Rep with a request for data, the US Rep creates a User Contact Log record of the event. The User Contact Log remains open until the request has been completed, at which time the US Rep updates, then closes the log record. The User Contact Log record can be modified several times before the request is completed. Each time a Contact Log is modified, the log will display the operator that made the modification as well as the date and time of the modification.

There are four User Contact Log screens: the Submit screen, the Display screen, the Edit screen, and the Entry Screen. The Submit screen is used to create new User Contact Log records, the Display screen is used to display already existing Contact Log records and to generate reports, the Edit screen is used to make changes to existing User Contact Log records, and the Entry screen is used as a path to the previous screens. When the User Contact Log is opened, it defaults to the Entry screen.

To launch the User Contact Log and to retrieve/modify an individual screen, see Section 19.2.2.

Two different methods can be used to retrieve accounts that require modifications. The US Rep can Modify an Individual User Contact Log record by using the menu at the top of the screen and following menu path Query \_\_Modify Individual to obtain the "Edit" screen. Then he/she must enter the unique Log-Id, Contact Name, E-mail address, or the Short Description field to retrieve the individual User Contact Log record. If the US Rep needs to modify several log records he/she can retrieve all of the User Contact Log records created during his/her shift by following menu path Query \_\_Modify all. The screen will default to the first User Contact Log record entered during his/her shift. At the bottom of the screen are "Previous" and "Next" action buttons, which can be used to toggle through the log records without inputting individual retrieval information. Pressing the next button will display the second User contact log record that was opened during the shift, and then the third, etc. Pressing the Previous button will go backwards, it will display the last User contact log record created during the shift. If there were 30 User Contact Log records created during the shift, the User Rep may not wish to toggle through 30 accounts; therefore, the Modify Individual would be more efficient.

The procedure that follows explains how to Modify a User Contact Log record. This procedure will modify an individual User Contact Log. This procedure will change the contact E-mail address and will note in the "Comments Log" that the data requested has been shipped, then the record will be closed.

- 1) Launch the **User Contact Log/Trouble Ticket** application.
  - The **User Contact Log** defaults to the **Entry** screen.
- 2 From the Menu Bar, follow menu path **Query**→**Modify Individual**.
  - The display changes from the **Entry** screen to the **Modify** screen.
  - The screen looks the same except the action buttons on the bottom of the screen.
- 3 Click on the field to be used for finding the User Contact Log record to be updated (i.e., **Log Id** field, **Contact Name** field, **E-mail Address** field, or the **Short Description** field).
  - The cursor is displayed in the selected field.
- 4 Enter the information appropriate for the selected field (i.e., **Log Id**, **Contact Name**, **E-mail Address**, or something remembered from the **Short Description**).
  - The typed entry is displayed in the field.
- 5 Follow menu path **Query**→**Display**.
  - The User Contact Log record for the data request is displayed.
- 6 Click on the **Comment Log** field.
- 7 Enter a **Comment** describing the update.
  - The comment should indicate the action(s) taken (e.g., **Order for data completed; 10 granules ordered.**).
- 8 Click on the **Apply Edits** button.
  - Edits are not implemented until the **Apply Edits** button is pressed.
  - The **Modified-date** field will display the date and time of the modification.
  - The **Last-Modified-by** field will display the name of the User Services Representative under whose log-in the edit is made.
- 9 To close a User Contact Log record, select the **Log Status** button, while holding the mouse button down, drag it to **Close**, then release the mouse button.
  - The User Contact Log record is now closed.

### 19.3 Canceling an Order

A user may choose to cancel a data order for any of a number of reasons. User Services may be called upon to assist by performing the cancellation on behalf of the user. The procedures for cancellation of an order are:

- Create a User Contact Log record
- Validate the User

- ECS Order Tracking
- Cancel Order
- Update the User Contact Log

Assume a user calls to cancel an order for previously ordered data. As we have seen, this requires the creation of a User Contact Log record, and necessitates using the ECS User Account Management tool (Profile Accounts) to verify that the user is registered. Only then can you proceed to the next step.

### 19.3.1 ECS Order Tracking and Cancellation

To locate an order, either because a user wants to cancel it or for some other reason (e.g., a user wants to check on an order that has not been received), use the Order Tracking tool.

The order Tracking tool is a view only tool. To assist you in finding an existing order, it has several query options:

- User Name - If there is more than one order under the same first and last name, the system offers a Verify User Selection screen to display additional data about each order, including the date it was placed, to help in the verification.
- Order ID - The Order ID is the unique identification number generated when the order was placed.
- Request ID - For large orders, the Data Server may partition the order and assign more than one Request ID. If you use this query option, the unique Order ID will also be displayed to assist in tracking all parts of the order.

The number of orders displayed can be reduced by use of the Filter by Status option. You may select from several status filters:

- |                         |                        |
|-------------------------|------------------------|
| • Pending               | • Waiting for Shipment |
| • Operator Intervention | • Shipped              |
| • Staging               | • Aborted              |
| • Transferring          | • Canceled             |
| • Not found             | • Terminated           |

Use the following procedure to find the user's order for previously ordered data, beginning with a search using the **User Name** query option.

## ECS Order Tracking

- 1 Access the command shell
  - The command shell prompt is displayed.
- 2 At the UNIX command shell prompt, type **setenv DISPLAY *clientname*:0.0** and then press the **Return/Enter** key.
  - For *clientname*, use either the local terminal/workstation IP address or its machine name.
- 3 Start the log-in to the MSS client server by typing either **/tools/bin/ssh *hostname* (e.g., g0mss21)** at the UNIX command shell prompt, and then press the **Return/Enter** key.
  - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** (“y” alone does not work).
  - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 4.
  - If you have not previously set up a secure shell passphrase; go to Step 5.
- 4 If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your *Passphrase* and then press the **Return/Enter** key. Go to Step 6.
- 5 At the **<user@remotehost>'s password:** prompt, type your *Password* and then press the **Return/Enter** key.
- 6 To change to the directory containing the utility scripts to start MSS accountability GUIs, type **cd /path** and then press the **Return/Enter** key.
  - For *path*, use **/usr/ecs/mode/CUSTOM/utilities**, where *mode* will likely be **TS1**, **TS2**, or **OPS**.
- 7 Type **EcMsAcOrderGUIStart *mode***, where *mode* is **TS1**, **TS2**, or **OPS** (or other) as selected in Step 6.
  - The **ECS Order Tracking** window is displayed.
- 8 Click the **Radio Box** to the left of the **User Name**.
  - The cursor moves to the **Last Name** field.
- 9 Enter the **Last Name**, then press **Tab**.
  - The cursor moves to the **First Name** field.

**10** Enter the **First Name**, then press **Tab**.

**11** Click on the **Select All** button.

- All of the status filters are selected.

**12** Press the **Return/Enter** key or click on the **Query Order** button.

- The order is displayed in the **Order List** box in the **ECS Data Order Tracking** screen.
- The **Order ID, Home DAAC, Order Date, Order Type, Order Source, Status, Description, and Start Date** are displayed.

**13** If there are multiple requests, click on the order to highlight it in the **Order List** box, then click on the **Query Request** button.

- Every request number relating to the highlighted Order is displayed.
- The **Order ID, Request ID, Processing DAAC, Request Type, # Files, Size, Media, Format, Status, Ship Date, and Description** are displayed.

**14** Click on the order or the specific request to be canceled to highlight it.

**15** To cancel a highlighted request, click on the **Delete Request** button.

- The request is deleted from the system.

**16** To cancel a highlighted order, first click on the **Update Order** button.

- The **Update** dialog box is displayed.

**17** In the **Update** dialog box, make sure the **Status** checkbox has a check in it (click in the checkbox if necessary).

- The **Status** checkbox displays a check mark.

**18** Click on the pull-down arrow to the right of the **Status New Values** text field, hold the left mouse button and dragging to select the value "Canceled."

- The **Status New Values** text field displays **Canceled**.

**19** Click on the **Update** button.

- The order status is changed to **Canceled**.

## **19.4 Fulfilling a Subscription**

User Services may be called upon to support users in ECS functions related to subscriptions. The ECS subscription capability supports users' requirement to have actions taken based on the occurrence of future events (i.e., to be notified or have data transferred when certain conditions are met, such as data becoming available, or a new advertisement occurring). The ECS design provides the following subscription service capabilities:

- register new events
  - stored persistently
  - made available through Advertisement Service
- accept subscriptions
  - accept new subscription requests that specify an action to be taken and an event to initiate the action
  - accept subscription update requests to update stored subscriptions
  - validate subscription requests
- process subscriptions upon event notification
  - identify all subscriptions to the specified event
  - process the actions defined in the subscriptions

E-mail notification

direct program interface to other service providers

The initial screen of the subscription services tool lists existing subscriptions and displays subscription identification data and other information associated with subscriptions. From the initial screen, the operator can access other screens that permit adding or deleting subscriptions, as well as screens for editing existing subscriptions. The screens for adding and editing subscriptions are essentially identical. The main screen for adding/editing a subscription may be accessed in two ways. To add a subscription, the screen may be accessed by clicking on the Add Subscription button. To edit a subscription, the screen may be populated with data from an existing subscription and accessed by first clicking on a subscription in the Subscription Information window and then clicking on the Edit Subscription button.

Two major elements of a subscription are its event, or triggering circumstance, and the action to be taken by ECS upon occurrence of the event. The subscription service lets you identify subscribable events and specify actions to be taken on behalf of a user upon the occurrence of an identified subscribable event. Normally, the action will be to send email notification of the occurrence of the event. A click on the Browse Events button displays the Browse Events screen. This screen permits review and selection from a list of subscribable events to specify the triggering circumstance of a subscription being added.

A click on the Actions button on the Add/Edit Subscriptions screen displays the Actions screen. This screen is employed when a user wishes to acquire a data product associated with the occurrence of an event. It permits entry of parameters necessary to specify an acquire action (e.g., ftp push, tape distribution) to be taken when the subscribable event occurs.

Finally, a user may wish to restrict a subscription to only those instances of an event that fall within certain boundary constraints. For example, a science user may wish to receive notice of the availability of a certain type of data on a particular geographic range of the earth's surface, but only

if the cloud cover was less than 20% when the data collection occurred. The cloud cover restriction is a Qualifier that may be placed on the event using the subscription service screen. A click on the Qualifiers button on the Add/Edit Subscriptions screen displays this screen, which permits the operator to specify event qualifiers.

The following subsections and procedures illustrate the use of the subscription service to accommodate various user needs for subscription support.

#### **19.4.1 Fulfilling a Need for a One-Time Subscription**

Suppose a user has used the DAR Tool to submit a request for ASTER expedited data, and contacts you with a request to acquire the data via FTP push to a specific disk directory as soon as the data are received at the archive. The relevant data for the necessary subscription are:

- User ID
- Email Address
- Email Text
- Start Date
- Expiration Date
- Event ID
- Event Description
- Event Name
- Acquire
  - User Profile/ID
  - User Name
  - User Password
  - Host Name
  - Destination
- Qualifiers

The following procedure can be used to create the necessary subscription:

##### **Creating a One-time Subscription with Acquire**

- 1) Access the command shell
  - The command shell prompt is displayed.

- 2) At the UNIX command shell prompt, type **setenv DISPLAY *clientname*:0.0** and then press the **Return/Enter** key.
  - For *clientname*, use either the local terminal/workstation IP address or its machine name.
- 3) Start the log-in to the interface server by typing **/tools/bin/ssh *hostname*** (e.g., 10dms01, g0dms03, e0dms03, n0dms04), at the UNIX command shell prompt, and press the **Return/Enter** key.
  - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** (“y” alone does not work).
  - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 4.
  - If you have not previously set up a secure shell passphrase; go to Step 5.
- 4) If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your **Passphrase** and then press the **Return/Enter** key. Go to Step 6.
- 5) At the **<user@remotehost>'s password:** prompt, type your **Password** and then press the **Return/Enter** key.
  - NOTE: To access the Subscription Service, you will also need to perform a DCE login (see Steps 6 and 7).
- 6) At the UNIX prompt, type **DCE\_login *User ID***, and then press the **Return/Enter** key.
  - A **Password:** prompt is displayed.
- 7) At the **Password:** prompt, type **DCEPassw**.
  - A UNIX prompt is displayed.
  - NOTE: You can check that the DCE login is successful by typing **klist**, and the pressing the **Return/Enter** key; if the DCE login is successful, the logged in principal will be displayed, along with other DCE information.
- 8) To change to the directory containing the utility scripts to start the Subscription Server GUI, type **cd /*path*** and then press the **Return/Enter** key.
  - For *path*, use **/usr/ecs/<mode>/CUSTOM/utilities**, where *<mode>* will likely be TS1, TS2, or OPS.
- 9) Type **setenv MODE <mode>** and then press the **Return/Enter** key, where *<mode>* is that selected for the *path* in Step 8.
- 10) Type **source EcCoEnvCsh** and then press the **Return/Enter** key.

- 11) Type **EcSbSubServerGUIStart** *<mode>*, where *<mode>* is that selected in Step 10, and then press the **Return/Enter** key.
  - The initial screen of the **Subscription Service** is displayed.
- 12) Click on the **Add Subscription** button.
  - The **Add/Edit Subscriptions** screen is displayed.
- 13) Click on the **Browse Events** button.
  - The **Browse Events** screen is displayed.
- 14) Click on the **Find** field.
  - The cursor appears in the **Find** entry field.
- 15) Type **ASTER DAR ID 123456789** and then click on the **Find** button.
  - The desired event (in this case, **Event 109**) is highlighted in the **Event Information** window.
- 16) Click on the **OK** button.
  - The **Browse Events** screen is closed.
  - On the **Add/Edit Subscriptions** screen, **109** is shown as the Event ID: and Insertion of ASTER data is shown as the Event Description:.
  - The cursor is in the User ID: field.
- 17) Type dsaster and then press the Enter key.
  - The cursor moves to the Email Address: field.
- 18) Type dsaster@unh.edu and then press the Enter key.
  - The cursor moves to the Email Text: field.
- 19) Type Requested data sent by ftp push to /home/dsaster/ftppush and then press the Enter key.
  - The cursor moves to the first window in the Start Date: field.
- 20) Type in the current date, reflecting the format mm/dd/yyyy.
- 21) Click on the first window of the Expiration Date: field to place the cursor there, and type in data to set the expiration date to 12/31/1998.
  - Set the expiration date so that the subscription duration covers the period in which the data are likely to reach the archive. When the user requests the subscription, it may be helpful to determine information about the data capture (e.g., in this case, the duration of the requested ASTER data acquisition).

22) Click on the Actions button.

- The Actions screen is displayed.

23) Click on the ftp Push toggle button.

- The ftp Push button shows as depressed.

24) Click on the User Profile: field.

- The cursor appears in the User Profile: field.

25) Type in dsaster and then press the Enter key.

- The cursor moves to the User Name: field.

26) Type in D.S. Aster and then press the Enter key.

- The cursor moves to the User Password: field.

27) Type in the password (in this case, sbpass1) and then press the Enter key.

- The cursor moves to the Verify Password: field.

28) Type in the password again (in this case, sbpass1) and then press the Enter key.

- The cursor moves to the Host Name: field.

29) Type in the host name (in this case, science.lib.unh.edu) and then press the Enter key.

- The cursor moves to the Destination: field.

30) Type in the directory to which the file is to be pushed (in this case, /home/dsaster/ftppush).

31) Click on the OK button.

- The Actions screen is closed and the Add/Edit Subscriptions screen is accessible.

32) Click on the Submit button.

- The Add/Edit Subscriptions screen is closed and the initial screen of the Subscription Service is accessible.
- The new subscription is displayed in the Subscription Information window.

33) Follow menu path File(Exit).

- The Subscription Service screen is closed.

#### **19.4.2 Fulfilling a Need for an Open-Ended Subscription**

Suppose a user notes an advertisement for quarterly updates on an ocean biology model based on data obtained in the Sea-viewing Wide Field-of-view Sensor (SeaWiFS) program. She requests an

ongoing, regular E-mail notification when an update is available. The relevant data for the subscription are:

- User ID
- Email Address
- Email Text
- Start Date
- Expiration Date
- Event ID
- Event Description
- Event Name
- Acquire
- Qualifiers Use the following procedure to establish an ongoing subscription for the requested notification:

### Creating an Open-Ended Subscription

- 1) Access the command shell
  - The command shell prompt is displayed.
- 2) At the UNIX command shell prompt, type **setenv DISPLAY *clientname*:0.0** and then press the **Return/Enter** key.
  - For *clientname*, use either the local terminal/workstation IP address or its machine name.
- 3) Start the log-in to the interface server by typing **/tools/bin/ssh *hostname*** (*e.g.*, l0dms01, g0dms03, e0dms03, n0dms04), at the UNIX command shell prompt, and press the **Return/Enter** key.
  - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** (“y” alone does not work).
  - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 4.
  - If you have not previously set up a secure shell passphrase; go to Step 5.
- 4) If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your **Passphrase** and then press the **Return/Enter** key. Go to Step 6.

- 5) At the `<user@remotehost>`'s **password:** prompt, type your *Password* and then press the **Return/Enter** key.
  - NOTE: To access the Subscription Service, you will also need to perform a DCE login (see Steps 6 and 7).
- 6) At the UNIX prompt, type **DCE\_login User ID**, and then press the **Return/Enter** key.
  - A **Password:** prompt is displayed.
- 7) At the **Password:** prompt, type *DCEPassw*.
  - A UNIX prompt is displayed.
  - NOTE: You can check that the DCE login is successful by typing **klist**, and the pressing the **Return/Enter** key; if the DCE login is successful, the logged in principal will be displayed, along with other DCE information.
- 8) To change to the directory containing the utility scripts to start the Subscription Server GUI, type **cd /path** and then press the **Return/Enter** key.
  - For *path*, use `/usr/ecs/<mode>/CUSTOM/utilities`, where `<mode>` will likely be TS1, TS2, or OPS.
- 9) Type **setenv MODE <mode>** and then press the **Return/Enter** key, where `<mode>` is that selected for the *path* in Step 8.
- 10) Type **source EcCoEnvCsh** and then press the **Return/Enter** key.
- 11) Type **EcSbSubServerGUIStart <mode>**, where `<mode>` is that selected in Step 10, and then press the **Return/Enter** key.
  - The initial screen of the **Subscription Service** is displayed.
- 12) Click on the Add Subscription button.
  - The Add/Edit Subscriptions screen is displayed.
- 13) Click on the Browse Events button.
  - The Browse Events screen is displayed.
- 14) Click on the Find field.
  - The cursor appears in the Find entry field.
- 15) Type SeaWiFS Model Update and then click on the Find button.
  - The desired event (in this case, Event 153) is highlighted in the Event Information window.
- 16) Click on the OK button.
  - The Browse Events screen is closed.

- On the Add/Edit Subscriptions screen, 153 is shown as the Event ID: and Ocean Biology Model Update Insertion is shown as the Event Description:.
  - The cursor is in the User ID: field.
- 17) Type **pascient** and then press the **Enter** key.
- The cursor moves to the **Email Address:** field.
- 18) Type pascient@engr.1.engr.hamptonu.edu and then press the Enter key.
- The cursor moves to the Email Text: field.
- 19) Type Ocean biology model quarterly update is available and then press the Enter key.
- The cursor moves to the first window in the Start Date: field.
- 20) Type in data to set the start date to 07/01/1998.
- 21) Click on the first window of the Expiration Date: field to place the cursor there, and type in data to set the expiration date to 12/31/2005.
- Set the expiration date so that the subscription duration covers a period satisfactory to the user and/or reflecting DAAC policy on maximum duration for subscriptions. The duration and any policy governing restrictions on duration should be discussed when the user requests the subscription.
- 22) Click on the Submit button.
- The Add/Edit Subscriptions screen is closed and the initial screen of the Subscription Service is accessible.
  - The new subscription is displayed in the Subscription Information window.
- 23) Follow menu path File(Exit).
- The Subscription Service screen is closed.

### **19.4.3 Returning a List of Subscriptions**

The initial screen of the Subscription Service provides a list of subscriptions and information about them. This screen provides a useful resource for answering user queries concerning their subscriptions. The Find function may be used to search and highlight an individual subscription. Use the following procedure to obtain a list of subscriptions.

#### **Display a List of Subscriptions and Subscription Information**

- 1) Open the Subscription Service via the following UNIX commands.
  - Open the command shell.

- Type `xhost <remote_workstation_name>` and then press the Enter key.
- At the UNIX shell prompt, type `setenv DISPLAY clientname:0.0` and then press the Enter key. (Note: for "clientname", use either the IP address or machine name.)
- Open the command shell.
- Type `xhost <remote_workstation_name>` and then press the Enter key.
- At the UNIX shell prompt, type `setenv DISPLAY clientname:0.0` and then press the Enter key. (Note: for "clientname", use either the IP address or machine name.)
- Start the log-in to the interface server by typing `/tools/bin/ssh hostname` (e.g., `l0dms01`, `g0dms03`, `e0dms03`), at the UNIX command shell prompt, and press the Enter key.
- If you have previously set up a secure shell passphrase and executed `sshremote`, a prompt to Enter passphrase for RSA key '`<user@localhost>`' appears, go to the next step; if you have not previously set up a secure shell passphrase, skip the next step.
- If a prompt to Enter passphrase for RSA key '`<user@localhost>`' appears, type your Passphrase and then press the Enter key; skip the next step
- At the `<user@remotehost>`'s password: prompt, type your Password and then press the Enter key. (NOTE: To access the Subscription Service, you will also need to perform a DCE login).
- At the UNIX prompt, type `DCE_login User ID`, and then press the Enter key.
- A Password: prompt is displayed; `DCEPassw`.
- A UNIX prompt is displayed.
- To change to the directory containing the utility scripts to start the Subscription Server GUI, type `cd /path` and then press the Enter key.
- For path, use `/usr/ecs/<mode>/CUSTOM/utilities`, where `<mode>` will likely be `TS1`, `TS2`, or `OPS`.
- Type `setenv MODE <mode>` and then press the Enter key, where `<mode>` is that selected for the path in the previous step.
- Type `source EcCoEnvCsh` and then press the Enter key.
- Type **`EcSbSubServerGUIStart <mode>`**, where `<mode>` is that selected in the previous step and then press the Enter key.
- The initial screen of the Subscription Service is displayed.
- Click on the Add Subscription button.

- The Add/Edit Subscription screen is displayed.
  - Click on the Browse Events button.
  - The initial screen of the Subscription Service is displayed.
- 2) Click on the Find field.
    - The cursor appears in the Find entry field.
  - 3) Type in the User ID for the user whose subscription(s) are of interest.
    - Any subscription for the entered User ID is highlighted.

#### 19.4.4 Canceling a Subscription

Canceling a subscription is accomplished using the initial screen of the Subscription Service. Suppose you are a User Services representative and receive a call from a user requesting you to cancel her subscription for notification of Ocean Biology Model updates. The following procedure is applicable.

##### Cancel a Subscription

- 1) Access the command shell
  - The command shell prompt is displayed.
- 2) At the UNIX command shell prompt, type **setenv DISPLAY *clientname*:0.0** and then press the **Return/Enter** key.
  - For *clientname*, use either the local terminal/workstation IP address or its machine name.
- 3) Start the log-in to the interface server by typing **/tools/bin/ssh *hostname*** (*e.g.*, l0dms01, g0dms03, e0dms03, n0dms04), at the UNIX command shell prompt, and press the **Return/Enter** key.
  - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** (“y” alone does not work).
  - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 4.
  - If you have not previously set up a secure shell passphrase; go to Step 5.
- 4) If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your **Passphrase** and then press the **Return/Enter** key. Go to Step 6.

- 5) At the `<user@remotehost>`'s **password:** prompt, type your *Password* and then press the **Return/Enter** key.
  - NOTE: To access the Subscription Service, you will also need to perform a DCE login (see Steps 6 and 7).
- 6) At the UNIX prompt, type **DCE\_login User ID**, and then press the **Return/Enter** key.
  - A **Password:** prompt is displayed.
- 7) At the **Password:** prompt, type *DCEPassw*.
  - A UNIX prompt is displayed.
  - NOTE: You can check that the DCE login is successful by typing **klist**, and the pressing the **Return/Enter** key; if the DCE login is successful, the logged in principal will be displayed, along with other DCE information.
- 8) To change to the directory containing the utility scripts to start the Subscription Server GUI, type **cd /path** and then press the **Return/Enter** key.
  - For *path*, use `/usr/ecs/<mode>/CUSTOM/utilities`, where *<mode>* will likely be TS1, TS2, or OPS.
- 9) Type **setenv MODE <mode>** and then press the **Return/Enter** key, where *<mode>* is that selected for the *path* in Step 8.
- 10) Type **source EcCoEnvCsh** and then press the **Return/Enter** key.
- 11) Type **EcSbSubServerGUIStart <mode>**, where *<mode>* is that selected in Step 10, and then press the **Return/Enter** key.
  - The initial screen of the **Subscription Service** is displayed.
- 12) Click on the Find field.
  - The cursor appears in the Find entry field.
- 13) Type in the User ID for the user whose subscription(s) are of interest (in this case, pascient).
  - Any subscription for the entered User ID is highlighted.
- 14) If the subscription requested for cancellation is not the highlighted one (in this case, Event ID 153), click on it.
  - The selected subscription information is highlighted.
- 15) Click on the Delete Subscription button.
  - The highlighted subscription is cancelled.
- 16) Follow menu path File(Exit).
  - The Subscription Service screen is closed.

## 19.5 Data Dictionary Maintenance

Requests for ECS services may come from the EOS Data Gateway (EDG) Web Client of Version 0 (V0). For example, users, including those from the ASTER Ground Data System (GDS), will submit requests for data searches and product orders using the EDG Search and Order Tool. Requests for ECS products or services (e.g., Directory Search requests, Inventory Search requests, Browse requests, Product requests) are sent to the ECS V0 Gateway. To accommodate mapping of terminology between the ECS and the V0 system, the ECS V0 Gateway reads the ECS Data Dictionary containing the terminology mapping information, ensuring that the request can be directed to the appropriate science data server. A Data Dictionary Administrator builds the ECS Data Dictionary V0 System search parameters, ECS schema, and metadata. The V0 client must have ECS Valid terminology for searchable attributes (e.g., source, sensor, geophysical parameter, data set name, data center ID, campaign, processing level, geographical coordinates, and temporal intervals) in order to search ECS holdings.

Accordingly, upon establishment of a new ECS data set, valids for the data set must be made available to V0. EOSDIS V0 IMS has a two-week valids update cycle:

- Data centers (sites) submit their new valids, definitions, and/or package Object Description Language (ODL) file(s). An ODL file is a formatted ASCII text file that contains the keyword descriptions for the data sets.
- Valid ODL files are transferred to the V0 IMS using anonymous FTP.
- The IMS team acknowledges receipt of the new valids submission and runs a syntax checker on the files.
- The files are processed and the valids are tested.

More detailed information on the cycle and the update process may be obtained at [http://harp.gsfc.nasa.gov/v0ims/valids/valids\\_procedures.html](http://harp.gsfc.nasa.gov/v0ims/valids/valids_procedures.html).

There is two-way interoperability with the ASTER GDS for product search and orders. This means that ASTER GDS users can search, browse, and order ECS products, and ECS users can search, browse, and order products available at GDS. Information is also exchanged concerning price estimates and order status. ASTER GDS access to ECS products and services is through the EROS Data Center (EDC). Therefore, all ECS collection information must be available at EDC. Furthermore, ECS must be able to use ASTER GDS dataset valids.

Use the following procedure to launch the Data Dictionary Maintenance Tool.

### Launch Data Dictionary Maintenance Tool

#### 1 Access the command shell

- The command shell prompt is displayed.

- 2 At the UNIX command shell prompt, type **setenv DISPLAY *clientname*:0.0** and then press the **Return/Enter** key.
  - For *clientname*, use either the local terminal/workstation IP address or its machine name.
- 3 Start the log-in to the interface server by typing **/tools/bin/ssh *hostname*** (e.g., g0ins02) at the UNIX command shell prompt, and press the **Return/Enter** key.
  - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** (“y” alone does not work).
  - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 4.
  - If you have not previously set up a secure shell passphrase; go to Step 5.
- 4 If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your *Passphrase* and then press the **Return/Enter** key. Go to Step 6.
- 5 At the **<user@remotehost>'s password:** prompt, type your *Password* and then press the **Return/Enter** key.
- 6 To change to the directory containing the utility scripts to start the Data Dictionary Maintenance Tool GUI, type **cd /*path*** and then press the **Return/Enter** key.
  - For *path*, use **/usr/ecs/<mode>/CUSTOM/utilities**, where *<mode>* will likely be **TS1**, **TS2**, or **OPS**.
- 7 Type **EcDmDdMaintenanceToolStart <mode>**, where *<mode>* is that selected in Step 7, and then press the **Return/Enter** key.
  - The initial screen of the **Data Dictionary Maintenance Tool** is displayed.

Use the following procedure to launch the Data Dictionary Maintenance Tool.

### **Launch Data Dictionary Maintenance Tool**

- 8 Access the command shell
  - The command shell prompt is displayed.
- 9 At the UNIX command shell prompt, type **setenv DISPLAY *clientname*:0.0** and then press the **Return/Enter** key.
  - For *clientname*, use either the local terminal/workstation IP address or its machine name.

- 10** Start the log-in to the interface server by typing `/tools/bin/ssh hostname` (e.g., g0ins02) at the UNIX command shell prompt, and press the **Return/Enter** key.
- If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** (“y” alone does not work).
  - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 4.
  - If you have not previously set up a secure shell passphrase; go to Step 5.
- 11** If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your *Passphrase* and then press the **Return/Enter** key. Go to Step 6.
- 12** At the `<user@remotehost>'s password:` prompt, type your *Password* and then press the **Return/Enter** key.
- 13** To change to the directory containing the utility scripts to start the Data Dictionary Maintenance Tool GUI, type `cd /path` and then press the **Return/Enter** key.
- For *path*, use `/usr/ecs/<mode>/CUSTOM/utilities`, where *<mode>* will likely be **TS1**, **TS2**, or **OPS**.
- 14** Type `EcDmDdMaintenanceToolStart <mode>`, where *<mode>* is that selected in Step 7, and then press the **Return/Enter** key.
- The initial screen of the **Data Dictionary Maintenance Tool** is displayed.

Use the following procedure to launch the Data Dictionary Maintenance Tool.

### **Launch Data Dictionary Maintenance Tool**

- 15** Access the command shell
- The command shell prompt is displayed.
- 16** At the UNIX command shell prompt, type `setenv DISPLAY clientname:0.0` and then press the **Return/Enter** key.
- For *clientname*, use either the local terminal/workstation IP address or its machine name.

- 17 Start the log-in to the interface server by typing `/tools/bin/ssh hostname` (e.g., g0ins02) at the UNIX command shell prompt, and press the **Return/Enter** key.
  - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** (“y” alone does not work).
  - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 4.
  - If you have not previously set up a secure shell passphrase; go to Step 5.
- 18 If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your *Passphrase* and then press the **Return/Enter** key. Go to Step 6.
- 19 At the `<user@remotehost>`'s **password:** prompt, type your *Password* and then press the **Return/Enter** key.
- 20 To change to the directory containing the utility scripts to start the Data Dictionary Maintenance Tool GUI, type `cd /path` and then press the **Return/Enter** key.
  - For *path*, use `/usr/ecs/<mode>/CUSTOM/utilities`, where *<mode>* will likely be **TS1**, **TS2**, or **OPS**.
- 21 Type `EcDmDdMaintenanceToolStart <mode>`, where *<mode>* is that selected in Step 7, and then press the **Return/Enter** key.
  - The initial screen of the **Data Dictionary Maintenance Tool** is displayed.

Use the following procedure for import of ASTER dataset valids.

### Import Valids

- 1 Launch the Data Dictionary Maintenance Tool.
- 2 Click on the **Import Valids File** tab.
  - The **Import Valids File** screen is displayed.
- 3 Under **Load Valids File.**, click in the **File Name:** field and type `<validsfilename>`.
  - `<validsfilename>` is the full path for the file to be imported. It is possible to click on the **Browse . . .** button and click to select the file.
  - The typed or selected entry is displayed in the **File Name:** field.
- 4 Click on the **Check** button.
  - The system checks the syntax of the valids file and generates any collection messages.

- 5 Under **Save Syntax Error File**, click in the **File Name:** field and type `<errorfilename>`.
  - `<errorfilename>` is the full path for the file to be saved. It is possible to click on the **Browse . . .** button and click to select a file.
- 6 To save the statistics or warnings to the named statistics/warning file, click on the **Save** button.
  - The file is saved.
- 7 To submit the collection to the Data Dictionary, click on the **Update** button.
  - The collection is inserted.
- 8 Click on the **Map Attributes/Keywords** tab.
  - The **Map Attributes/Keywords** screen is displayed.
- 9 Click on the **Update All Collections** button.
  - The ECS collections are updated with the new mappings. (*Note:* This update may take several minutes.)

## Checking Data Dictionary Server Log Files

Log files can often provide information that will identify possible sources of disruption in Data Dictionary server function or communications, suggesting additional checks or actions that may help resolve the problem. The procedure for checking a log file starts with the assumption that the operator has logged in to ECS.

### Checking Data Dictionary Server Log Files

- 1 To log in to the host for the server and log(s) to be examined, type `/tools/bin/ssh <hostname>` and then press the **Return/Enter** key.
  - For `<hostname>`, use **e0ins02** at EDC, **g0ins02** at GSFC, **l0ins02** at LaRC, and **n0ins02** at NSIDC.
  - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** (“y” alone does not work).
  - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 2.
  - If you have not previously set up a secure shell passphrase; go to Step 3.
- 2 If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your *Passphrase* and then press the **Return/Enter** key. Go to Step 4.
  - The prompt reflects the login to the selected host.

- 3 At the `<user@remotehost>`'s **password:** prompt, type your *Password* and then press the **Return/Enter** key.
  - The prompt reflects the login to the selected host.
- 4 Type `cd /usr/ecs/<MODE>/CUSTOM/logs` and then press the **Return/Enter** key.
  - The prompt reflects the change to directory `/usr/ecs/<MODE>/CUSTOM/logs`.
- 5 To view a server log, type `pg filename` and then press the **Return/Enter** key.
  - *filename* refers to the account management log file to be reviewed (e.g., **EcDmDictServer.ALOG**, **EcDmDictServerDebug.log**).
  - The first page of the log file is displayed; additional sequential pages can be displayed by pressing the **Return/Enter** key at the `:` prompt.
  - Although this procedure has been written for the `pg` command, any UNIX editor or visualizing command (e.g., **vi**, **more**, **tail**) can be used to review the log file.
  - Typically, the `<server>Debug.log` captures more detailed information than the `<server>.ALOG`. However, for some servers (e.g., **SDSRV**), there may be significant detail in the `<server>.ALOG`. It is also important to note that the **DebugLevel** setting in the `<server>.CFG` file determines the level of detail captured in the `<server>Debug.log` (**0** is off, a setting of **1** captures status and errors, a setting of **2** captures major events, and a setting of **3** is a full trace recording of all activity). If the **DebugLevel** has been set to one of the lower levels during operations, the System Administrator may set it to **3** during troubleshooting.
- 6 Review the log file(s) to determine if there are any indications of connection problems (DCE) or errors at start up.
  - The **EcDmDictServerDebug.log** file for the User Profile/User Registration server may contain an error message concerning **PF Init** or some **DCE** error or problem (notify the System Administrator/DCE Administrator).
  - The **EcDmDictServer.ALOG** file may contain evidence of a Sybase error (e.g., **SybaseErrorCode1 =92014;SybaseErrorMessage1 ="x0ins01\_srvr"** or **SybaseErrorCode2 =16;SybaseErrorMessage2 =""**) (notify the Database Administrator).
- 7 To exit the `pg` review of the log file, type `q` at the `:` prompt and then press the **Return/Enter** key.

## 19.6 Cross-DAAC Referral Processing

Sometimes a user may request your help in placing an order for data that are not available at your DAAC. Similarly, a User Services representative at another DAAC may receive a request for help

in placing an order for data that are held at your DAAC, with the result that you receive a referred request.

## **Referral to Another DAAC**

Suppose, for example, that User Services receives an E-mail request from Dr. Ima D. Geologist for help in finding Landsat images of an area in Africa from the NASA Landsat Data Collection. The User Services representative follows an established approach in response:

- User Contact Log record – document the request.
- User Profile – verify that the requester is a registered user.
- Data Search and Order tool – locate the requested data.

When the search results indicate that the data are held at the Earth Resources Observation System (EROS) Data Center (EDC), the User Services representative refers the request to that site. The referral is accomplished by

- forwarding the original E-mail request to User Services at EDC.
- adding some forwarding information to explain the origin of the request.
- including the preliminary search as a desktop object attached to the E-mail.
- including the original Contact Log Id record as an attachment to assist in any backtracking that may be necessary.
- sending the requester an E-mail message explaining that the request for help has been forwarded to EDC and providing a contact name and phone number at EDC.

The action is completed by updating the User Contact Log record to document the referral, and, because there should be no requirement for further interaction between the home DAAC and the requester, closing the User Contact Log.

## **19.7 Receiving a Referral from Another DAAC**

You may receive a cross-DAAC referral from a User Services representative at another DAAC who has received a request for help in locating and ordering data that is stored at your DAAC. In that case, you follow an established procedure that should seem familiar by now:

- User Contact Log record – document receipt of the referral.
- User Profile – verify for yourself that the requester is a registered user.
- Data Search and Order tool – locate the requested data.
- Review the E-mail – verify that the search is complete or add search parameters, contacting the user if more information is necessary.

- Submit the order.
- Update User Contact Log record – indicate completion of order; close the record.

## 19.8 Cross-DAAC Order Tracking

If a user has placed an order that required a cross-DAAC referral, there may arise a requirement for order tracking that involves more than one DAAC. For example, you may have referred an order to another DAAC, and if you receive a request for help from the user in tracking the status of the order, you may have to contact the other DAAC to provide the needed help. Similarly, you may be requested by another DAAC to provide the status of an order that has been referred.

## 19.9 Tracking to Another DAAC

Suppose you receive a request from Dr. Ima D. Geologist to provide the status of her order for Landsat Images. You may recall having referred the order to EDC, but you may not, or, if another User Services representative handled the initial request and referral, you may not know about it. Just as with any user contact, you follow established steps in providing the requested assistance:

- User Contact Log record – document the request.
- User Profile – verify that the requester is a registered user.

Now, however, if you do not recall or know about the referral, you may try to trace the order using the ECS Order Tracking Tool, without success because it is not pending in the system at your DAAC. The user has assured you that an order was placed. As a resourceful User Services representative, your next thought could be that the order has been fulfilled by your DAAC, and therefore has a status of completed. A reasonable check, then, is to examine the User Contact log records for a closed action related to the user's request. Use the following procedure.

### Query User Contact Log

- 1 Launch the **User Contact Log** application GUI.
  - The **User Contact Log** defaults to the **Entry** screen.
- 2 Click on the **Query** field.
- 3 Click on the **Fields** button, highlight **Contact Name**, and release the mouse button.
  - The **Query** field shows '**Contact Name**'.
- 4 Click the = button.
  - The **Query** field shows '**Contact Name**' =.
- 5 Enter the **Contact Name**, using quotation marks (in this case, "**Geologist**").
  - The **Query** field shows '**Contact Name**' = "**Geologist**".

- 6 Click the **AND** button.
  - The **Query** field shows '**Contact Name**' = "**Geologist**" **AND**.
- 7 Click on the **Fields** button, highlight "**Log Status**," and release the mouse button.
  - The **Query** field shows '**Contact Name**' = "**Geologist**" **AND** '**Log Status**'.
- 8 Click the = button.
  - The **Query** field shows '**Contact Name**' = "**Geologist**" **AND** '**Log Status**' =.
- 9 Enter ""**Closed**"" (using quotation marks).
  - The **Query** field shows '**Contact Name**' = "**Geologist**" **AND** '**Log Status**' = "**Closed**".
- 10 Choose **List** from the **Query** menu (follow menu path **Query**→**List**).
  - A list box is displayed showing the User Contact Log records that match the Query conditions.
- 11 Highlight the desired record and follow menu path **Query**→**Display . . .**.
  - The **Entry** screen fields display the data for the selected record.
  - The **Comment Log** field displays the comment that the request was forwarded to another DAAC (in this case, EDC).

## 19.10 Responding to a Tracking Request from Another DAAC

Given that the Comment Log in the User Contact Log record indicates that the request was forwarded, the next step is to use the telephone or E-mail to contact the DAAC to which the request was forwarded to check on the status of the request. That DAAC will then proceed with established steps to determine the status of the order:

- User Contact Log record – update the record to document the current status check.
- User Profile – verify that the requester is still a registered user.
- ECS Order Tracking tool – check on the status of the user's data request.
- telephone or E-mail to the user – provide the status of the data request.
- telephone or E-mail to the original DAAC – permit closing of the User Contact Log record there.
- User Contact Log record – update the record to document that the status was provided.

## 19.11 On-Demand Product Requests

As of Release 5B, authorized users can use an HTML interface to submit requests for the creation of ASTER high-level products, Digital Elevation Models (DEMs), and non-standard Level 1B products. To provide these on-demand products, the Client, Planning, Data Processing, and System Management Subsystems of ECS at the EROS Data Center (EDC) include specific support capabilities.

- Client (CLS) provides an On-Demand Form Request Manager (ODFRM), which is an HTML interface to collect the user-specified parameters for the ASTER on-demand request.
- Planning (PLS) provides a server, the On-Demand Product Request Manager (ODPRM), for creating and queuing on-demand production requests.
- Data Processing (DPS) updates the status for high-level processing of on-demand requests.
- System Management Subsystem (MSS) includes on-demand requests in its Order Tracking Database and Data Order Tracking Tool.

User Services at EDC may be called upon to assist users in use of the ODFRM, and to use the Data Order Tracking Tool to provide the status of on-demand product requests or cancel them. **Error! Reference source not found.** illustrates the Welcome screen of the ODFRM, which is used to log in as a registered user authorized to use the ODFRM. For those users who need the authorization, it is granted using the User Registration GUI as part of the user registration process.

### Using the On-Demand Form Request Manager (ODFRM)

The following procedure is applicable for using the ODFRM to prepare an On-Demand Product Request.

#### Using the On-Demand Form Request Manager (ODFRM)

- 1 Access the command shell.
  - The command shell prompt is displayed.
- 2 At the UNIX command shell prompt, type **setenv DISPLAY *clientname*:0.0** and then press the **Return/Enter** key.
  - For *clientname*, use either the local terminal/workstation IP address or its machine name.

- 3 Start the log-in to a Netscape host by typing `/tools/bin/ssh hostname` (e.g., g0ins02, e0ins02, l0ins02, n0ins02) at the UNIX command shell prompt, and press the **Return/Enter** key.
  - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** (“y” alone does not work).
  - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 4.
  - If you have not previously set up a secure shell passphrase; go to Step 5.
- 4 If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your *Passphrase* and then press the **Return/Enter** key. Go to Step 6.
- 5 At the `<user@remotehost>`'s **password:** prompt, type your *Password* and then press the **Return/Enter** key.
  - You are logged in and a UNIX command shell prompt is displayed.
- 6 Type **netscape** and then press the **Return/Enter** key.
  - The Netscape web browser is displayed.
- 7 Click in the **Netsite:** field.
  - The field is highlighted.
- 8 Type <http://<x>0ins02u.ecs.nasa.gov:10000/CI0dHome.html> and then press the **Return/Enter** key.
  - The **ASTER On-Demand Form Request Manager** page is displayed.
- 9 Log in as a registered ECS user authorized to order an ASTER LIB product by typing a valid user ID in the **User ID:** field and a valid password in the **Password:** field. (*Note:* Leave the **E-mail Address:** field blank; E-mail Address is not required for an ECS user.)
  - The typed entries appear in the fields.
- 10 Click on the **Continue** button to continue.
  - The **Select Products** page appears.
- 11 Select the product to be requested (for this exercise, select **AST\_09T Surface Radiance -- TIR**) by clicking on the selection button to the left of the product name.
  - The selection is indicated.
- 12 Click in the **Identify Inputs:** text box.
  - The cursor is displayed in the **Identify Inputs:** box.

**13** The granule ID for the relevant input granule may now be typed, or, more appropriately, if you have used the ECS Data Gateway (EDG) web client to search and locate the input granule, the granule ID may be entered by using the **Copy** and **Paste** functions to copy it from the EDG inventory search result screen.

- The granule ID of the input granule is displayed in the **Identify Inputs:** text box.

**14** Click on the **Continue** button to continue.

- The ODFRM page displays valid values and defaults for AST\_09T processing parameters.

**15** Click on the **Continue** button to accept the defaults and continue.

- A **Shipping Information** page is displayed permitting selection of media options.

**16** Click on the appropriate selection button to identify the preferred method for transferring the product (no click is needed to accept the default) and then click on the **Continue** button.

- The **Order Review** page is displayed.

**17** When satisfied with the selections indicated on the Order Review page, click on the **Submit** button.

- The **Product Results** window is displayed showing that the order was submitted and providing tracking information.

**18** To exit from Netscape, follow menu path **File**→**Exit**.

## **19.12 Data Acquisition Request (DAR) Tool**

This topic addresses the Data Acquisition Request (DAR) tool, an ECS client tool for which science users may request assistance from User Services at the EROS Data Center (EDC). It is essential, therefore, that EDC User Services representatives be familiar with the tool, and be able to perform the functions necessary to create and submit a DAR, as well as to create and submit a query to the XAR database.

### **19.12.1 Purpose of the DAR Tool**

The DAR tool permits users to submit DARs, or requests for scheduling data acquisitions by the Advanced Spaceborne Thermal Emissions and Reflection (ASTER) Radiometer. The requests are submitted through the ECS client to the ASTER Ground Data System (GDS), located in Japan. The ASTER GDS controls scheduling of the ASTER instrument and provides the collected data as level 1A and level 1B data to the EDC.

### **19.12.2 The DAR Tool User Interface**

The window of the DAR tool is a screen with three tabs. When the DAR Tool is initially launched from the desktop, the DART tool opens with the first tab, called Summary, selected. There are two

main functional areas on the Summary tab, which allows the user to view a condensed presentation of DAR work, query parameters, and the returned results of submitted DAR request that are stored locally (on a hard drive or LAN):

- the Project Folders area, and
- the Parameters area.

The Project Folders area is intended to function as a file manager. In this area, DAR work that is stored locally (a hard drive or LAN) is displayed. This includes DAR requests upon which a user is still working, the parameters of DARs that have been sent, and the header data for DARs that have been returned from previous requests or DAR Database searches. It is intended that when a user selects a particular DAR, the Parameters field becomes populated with data entries that are relevant to the highlighted request.

If the user wishes to edit the contents of a DAR stored locally (i.e., finish an incomplete DAR that was saved or edit a previous DAR for which the parameters had been saved), the user can select the desired item from the Project Folders list by clicking on it and then on the pushbutton below the

Project Folders area labeled "Copy parameters of highlighted item to Create/Edit Request Tab." The action will cause all parameters stored for the highlighted item to populate the appropriate fields in the "Create/Edit Request" functional group where the user can inspect and/or edit them.

### **19.12.3 Create/Edit Request**

To edit the parameters, or to create a new DAR, the user clicks on the Create/Edit Request tab, bringing up the screen which provides access to all the functions necessary to create a new DAR or to edit existing DAR parameters. Some of these are immediately available, and others are in secondary dialog screens launched from pushbuttons at the right (i.e., Spatial Requirements, Temporal Requirements, Advanced Viewing Geometry, and Special Requests. Spatial and Temporal requirements must be entered to complete a DAR. Advanced Viewing Geometry and Special Requests options are not required. When a user visits one of these screens, makes entries or edits, and accepts the changes in that screen, a checkmark is placed in a box next to the pushbutton on the Create/Edit Request screen, providing a visual aid reminding the user of completed actions in preparing the DAR.

A Resource Estimate button, labeled Calculate & Display, executes an algorithm that estimates the number of good scenes that will be returned from the XAR request in progress, and a Submit button initiates sending the DAR to the ASTER Ground Data System (GDS) in Japan.

The Create/Edit Request screen permits selection of one or a combination of the telescopes that are part of the ASTER instrument. The three telescopes are:

- VNIR (Visible and Near-Infrared spectrum).
- SWIR (Short-wave and Infrared spectrum).
- TIR (Thermal Infrared spectrum).

Five possible selections are available through activation of an option button:

- Full Mode -- The full activation of the all bands of the VNIR, SWIR, and TIR telescopes together.
- VNIR Only -- The activation of all bands of the VNIR telescope only.
- V3N/V3B Stereo -- The activation of the V3N & V3B bands (a stereo pair) of the VNIR telescope. In this mode, V1 and V2 are not activated.
- SWIR & TIR -- The activation of all bands of the SWIR and TIR telescopes. In this mode, no bands of the VNIR telescope are activated.
- TIR Only -- The activation of the TIR telescope only. In this mode, no bands of the VNIR and SWIR telescopes are activated.

The user may click to choose to display or not to display Gain Settings for the available bands of each telescope. For each band of the VNIR telescope, the user can use the option button to select high, normal, or low gain settings. For each band of the SWIR telescope, the user can use the option button to select high, normal, low, or very low gain settings. These option buttons are desensitized when the telescope to which the affected bands belong is not selected.

#### **19.12.4 Spatial Requirements**

The Spatial Requirements screen allows the user to define an Area of Interest (AOI) and specify coverage criteria such as sampling, cross track fragmentation and area of interest duration for the query. The user can pan the map by dragging it with the mouse or by using the controls on the Pan & Zoom tab at the right side of the screen. Zoom controls are also found on this tab.

Immediately below the map display is a group of widgets labeled Area of Interest Polygon Selection. Clicking on the Create AOI button enables the user to enter data adding four geographic points in sequence to define a polygon on the map, either using data entry fields or using the mouse to click on the desired points on the map. Clicking on Apply and then Dismiss completes the entry of Spatial Requirements and returns to the Create/Edit Request screen.

#### **19.12.5 Temporal Requirements**

The Temporal Requirements screen allows the user to select the times at which observations for a specific DAR are to occur. First, the user must enter the start and end dates/times for the DAR Lifetime (the time over which all observations for the DAR are taken, within the year specified at the top of the screen). The next two parameters, "repeat interval" and "acquisition window" are somewhat interdependent. If the user decides that it is not necessary to have a steady stream of data about a particular AOI, but wants image data from the same AOI at regular time intervals, then the user must use the repeat interval and acquisition window controls to specify the number of evenly spaced intervals or the duration of time between the starts of evenly spaced intervals and the duration of those intervals. Clicking on Apply and then Dismiss completes the entry of Temporal Requirements and returns to the Create/Edit Request screen.

## 19.12.6 Optional Screens

Two other screens of the DAR Tool provide capability for the user to specify additional requirements for the ASTER data acquisition request. The Advanced Viewing Geometry screen allows the user to specify an Acceptable Sun Angle Range and either the Look Angle or View Swath for the query. The user may specify an instrument Look Angle in degrees relative to nadir or select a View Swath from up to 40 possible choices, or alternatively, specify an Acceptable Look Angle Range. For the Sun Angle and Look Angle, minimum and maximum degree angles can be specified. This is done by either numeric text entry or by using the arrow buttons to the right of the text field to set numeric values within the field. Clicking on Apply and then Dismiss completes the entry of Advanced Viewing Geometry Requirements and returns to the Create/Edit Request screen.

The Special Requests screen allows the user to identify any need and justification for special treatment of the request being prepared. Here the user can note any planned Ground Campaign (signifying a need to assign priority to the request to assure collection of data by satellite concurrent with data collection by scientists on the ground), identify any implementation urgency for the request, or request that the delivery of data be expedited and/or that data be delivered via a direct downlink. Text areas are provided to permit entry of appropriate justification for these special requests. Clicking on Apply and then Dismiss completes the entry of Special Requests and returns to the Create/Edit Request screen.

## 19.12.7 Resource Estimate

The Resource Estimate option executes an algorithm that estimates the number of good scenes that will be returned from the DAR being prepared. The result of the calculation is displayed in an information dialog. After viewing the results, the user can click OK to dismiss the dialog.

Clicking on the Submit button on the Create/Edit Request screen initiates the submission of the request. However, if the user has not visited and/or applied data entries for all of the screens of the DAR Tool, a warning dialog informs the user of the items for which parameters or data have not been entered and asks whether to submit the request anyway. If the user elects to continue the submit operation and the mandatory DAR request parameters have been supplied, a DAR ID is returned from Ground Data System several seconds later.

The following procedure illustrates an example DAR preparation and submission for collection of thermal infrared imagery of the Lake Tahoe area:

### Prepare and Submit a Data Acquisition Request (DAR)

- 1 Access the command shell
  - The command shell prompt is displayed.
- 2 At the UNIX command shell prompt, type **setenv DISPLAY *clientname*:0.0** and then press the **Return/Enter** key.
  - For *clientname*, use either the local terminal/workstation IP address or its machine name.

- 3 Start the log-in to the client server by typing `/tools/bin/ssh hostname` (e.g., e0ins02, g0ins02, l0ins02, n0ins02), at the UNIX command shell prompt, and press the **Return/Enter** key.
  - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** ("y" alone does not work).
  - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 4.
  - If you have not previously set up a secure shell passphrase; go to Step 5.
- 4 If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your *Passphrase* and then press the **Return/Enter** key. Go to Step 6.
- 5 At the `<user@remotehost>'s password:` prompt, type your *Password* and then press the **Return/Enter** key.
- 6 Type **netscape** and then press the **Return/Enter** key.
  - The **Netscape** browser window is displayed.
- 7 Type the entry for the Java DAR Tool (JDT) Uniform Resource Locator (URL) ([http://e0ins02.ecs.nasa.gov:10402/JDTApplet\\_plugin.html](http://e0ins02.ecs.nasa.gov:10402/JDTApplet_plugin.html)) directly into the **Location:** field, and then press the **Return/Enter** key.
  - A Netscape: The Java DAR Tool window is displayed.
  - A Java Console dialog box with scrolling information is displayed.
  - A dialog box is displayed with **Username:** and **Password:** fields.
  - **Note:** If you have not loaded the latest Java plugin for your browser, you will be prompted to do so. Download the plugin and follow the instructions. On UNIX, run `<(sh plugin_file_name.sh)` on the plugin file and answer the questions. Once the plugin is installed, restart the browser.
- 8 Click on the **Username:** field and type `<DAAC_login_name>`, click on the **Password:** field and type `<DAAC_password>`, and then click the **OK** button or press the **Return/Enter** key.
  - **Note:** An ECS DAAC account username and password allowing submission of a DAR must be created prior to performing this procedure. As an alternative, it is possible to access the Java DAR tool as "ECSGuest" to explore how most of the screens work, but it will not be possible to submit a DAR or receive a DAR ID.
  - A Java DAR tool "Welcome to the Data Acquisition Tool" dialog is displayed, with introductory information to the user. If the login is as "ECSGuest," the information indicates that submission of a DAR is not authorized, and information is given on how to apply for authorization.

- 9 Click on the **OK** button in the "Welcome" dialog box.
  - The dialog box is removed.
  - A large new window, **The Java DAR Tool** window, is displayed, with the **Organizer** tab as the default, showing a list of folders and the names of any previously saved or submitted DARs.
- 10 Click on the **Create/Edit DAR** tab.
  - The **Create/Edit DAR** functions are displayed, with the **General** nested tab displayed as default and **Untitled xAR** showing as the default in the **XAR Title:** field.
- 11 Highlight the title **Untitled xAR** in the **XAR Title:** field and type **JDARC/O\_<date>**.
  - The typed title appears in the **XAR Title:** field.
- 12 Click on the arrow to the right of the **Investigation Class:** field.
  - A pop-up window displays valid classes.
- 13 Click on **Soils** in the pop-up window.
  - The pop-up window disappears and the selection (**Soils**) is displayed in the **Investigation Class:** field.
- 14 Click in the **Scientific Objective:** field and type a scientific objective.
  - *Note:* Information to be entered in this field should be obtained from the scientist for whom the DAR is being created.
- 15 Verify that the **Maximum Cloud Coverage** is <20% (if necessary, click on the option button to display a pop-up window and, holding down the left mouse button, drag the cursor to select <20%).
  - The selected value is displayed on the option button.
- 16 Click on the option button for **Telescope Selection** and, holding down the left mouse button, drag the cursor to select **TIR Only**.
  - The selection is displayed on the option button.
- 17 Click on the **Update DAR >>>** button at the bottom of the window.
  - A dialog box is displayed with a field for naming the new DAR, and showing **Copy of JDARC/O\_<date>** as the default name.
- 18 Highlight the words **Copy of** in the **New Name:** text entry field and press the **Delete** key.
  - The name **JDARC/O\_<date>** is displayed in the field.

19 Click on the **OK** button of the **New Name** dialog box.

- The **New Name** window is removed and the parameters are saved.
- *Note:* The new values of parameters may be observed by clicking on the **Primary Attribute** toggle icon in the **DAR Summary** window on the right side of the form.

20 Click on the **Spatial** nested tab.

- The **Spatial** nested tab is displayed with a map showing no designated areas of interest (AOIs).

21 Click on the **AOI Mode** button.

- *Note:* A button name is displayed when the cursor is moved over the button. The **AOI Mode** button is the one with the irregularly-shaped polygon icon.
- The button is displayed in the depressed position.

22 Move the cursor into the map area.

- The cursor changes to the crosshairs shape when moved into the map area.

23 Click on the **View Coordinates** button (just to the right of the **AOI Mode** button).

- A **View Coordinates** dialog box is displayed with no lat/long coordinates entered.

24 Add four points to the map by clicking on the map four times to form a small, four-sided polygon.

- Four points are displayed on the map, connected with red lines.
- Lat/long coordinates for the selected points are displayed in the **View Coordinates** box. *Note:* An AOI may be created with precise coordinates by entering the coordinates in the **View Coordinates** box instead of clicking the points on the map.

25 Click on the **Update DAR >>>** button.

- The changed spatial parameters are updated in the DAR Summary display area under the **Spatial** heading.

26 Click on the **Temporal** nested tab

- The **Temporal** nested tab is displayed.

27 In the **XAR Lifetime:** area, highlight one of the numbers in the **Begin** field and use the arrow keys or type an entry to specify a desired number; then do the same for other numbers in the **Begin** field until the desired beginning date is identified.

- *Note:* The fields represent Month, Day, and Year. For this exercise, change the date to the **current date plus one day**.

- The **Begin** date is displayed as the current date plus one day.
- 28** In the **XAR Lifetime:** area, highlight one of the numbers in the **End** field and use the arrow keys or type an entry to specify a desired number; then do the same for other numbers in the **End** field until the desired ending date is identified.
- *Note:* The fields represent Month, Day, and Year. For this exercise, change the date to the **current date plus ten days**.
  - The **End** date is displayed as the current date plus ten days.
- 29** Click on the **Repeat Interval (Days)** field and use the arrow keys or type an entry to change the number to the desired number of days for the repeat interval.
- For this exercise, change the number to **2** days.
  - The numeral **2** is displayed in the **Repeat Interval (Days)** field.
- 30** Click on the **Update DAR >>>** button.
- The changed spatial parameters are updated in the DAR Summary display area under the **Temporal** heading.
- 31 (See important note below!)** On the **Create/Edit DAR** tab, click on the **Submit DAR >>>** button.
- *Note - Important:* If you are logged in with authorization to submit a DAR, for this training exercise you must check with the System Administrator to ensure that this JDAR will be sent to the local simulator unless prior coordination has been made with ASTER. The IP address and port are set in the EcGwDARServer.CFG file on the CSS primary server (e0ins01).
  - A confirmation dialog box is displayed with the information that "The DAR is about to be submitted to GDS."
- 32** To confirm the DAR submit action, click on the **Yes** button in the warning box.
- The confirmation dialog box is removed.
  - The ASTER reply **XAR ID** dialog box is displayed.
- 33** Click on the **OK** button in the **XAR ID** dialog box.
- The **XAR ID** dialog box is removed and the **Java DAR Tool** window is displayed as the active window.
  - The user receives email confirming that the DAR was received and containing a subscription ID.

**34** To exit from the **Java DAR Tool**, select the **Netscape** window; then follow menu path **File→Exit**.

- The **Java DAR Tool** windows and the browser window are removed.

### **19.12.8 Modifying a DAR**

After a DAR has been submitted and prior to its fulfillment, it is possible to submit a modification for limited changes to the request. The modification is accomplished using the DAR Modify Request screen.

There are only two modifications that are permitted. One is to specify a less restrictive specification of the maximum cloud cover that will be tolerated (it is not possible to specify a lower percentage for maximum cloud cover than submitted for the original request). The other is to change the status of the DAR. You may change the status of an active request from Active to Suspended, or change the status of a suspended request from Suspended to Active. That is, a DAR will not be removed from the system, but it may be suspended indefinitely if the data is no longer wanted, or a suspended DAR may be reactivated. Presume that the DAR you submitted for the Lake Tahoe area thermal infrared imagery is active, and that you wish to modify it by changing the maximum cloud cover percentage to 40%. Use the following procedure:

#### **Modify an Active DAR**

- Double click on the icon for the DAR Tool on the desktop.
  - The DAR Tool window is displayed, with the Project Folders field listing any DARs for which you have DAR IDs, including the Tahoe one you created.
- Click on the Modify Request tab.
  - The Modify Request functions are displayed, with the Tahoe DAR ID displayed in the xAR ID: display field and the Maximum Cloud Coverage (%): option button showing <20%.
- Click on the Maximum Cloud Coverage (%): option button.
  - A pop-down menu is displayed with additional percentage choices.
- Drag the cursor to 40% and release the mouse button.
  - The Maximum Cloud Coverage (%): option button shows <40%.
- Optional: To change the status of the DAR, click on the Suspended toggle button.
  - The Active toggle button is deselected and the Suspended toggle button is selected.
- To activate a suspended DAR, click on the Active toggle button.
  - The Suspended toggle button is deselected and the Active toggle button is selected.

- To provide an explanation or justification for the change, click in the Requester Comments: field to place the cursor there, and then type the desired comments to explain or justify the change.
- Click on the Submit button.
  - The DAR modification is submitted to the Ground Data System (GDS) in Japan.
  - After a few seconds, another window is displayed confirming receipt of the modification.
- Click on the OK button in the confirmation window.
  - The confirmation window is closed.
- Click on the Summary tab.
  - The Summary functions are displayed.
- Follow menu path File (Exit).
  - The DAR tool is closed.

### 19.13 Earth Science On-Line Directory

The Earth Science On-Line Directory (ESOD) is a combination of HTML web pages and a number of Common Gateway Interface (CGI) programs that are called from the HTML web pages in order to communicate through the Advertising Server to Data Server and Communications subsystems within the ECS. The web pages provide an interface that allows users to **Search for advertisements**. General users can search for Earth Science related data and services through the web interfaces of the ESOD. Searches can be done in a variety of ways that include wild card text searches.

ESOD permits users to query the on-line directory over the World Wide Web. Users can download an installable advertised service directly to their supported Unix workstations.

**NOTE:** Special care should be taken to guard against computer viruses when accepting installable advertised services.

On-site M&O is responsible for ESOD Administration to ensure that ESOD runs smoothly and that users can access the information they want.

## 20. Library Administration

### 20.1 Systems Operation Support Baselined (CDRL/DID) Document Maintenance

#### 20.1.1 Library Administration Overview

The ECS Library Administration consist of several entities within the ECS project. This methodology was developed to utilize processes already established. Library Administration covers two areas, maintenance and distribution of Baselined ECS (CDRL/DID) documents, COTS/Custom Software and documentation, and Non-Contractual Documentation to be delivered the DAACs and other Government facilities. There three Web sites that these documents can be accessible. The ECS Data Handling System, ECS Baseline Information System and System Monitoring Center.



**Figure 20.1.1-1. EDHS Home Page, ECS Baseline Information, and System Monitoring Center**

#### 20.1.2 Authoring Documents

Systems Operation Support (SOS) sassing engineer will create all source material (text, graphics files, etc.) per CDRL/DID preparation instructions and be accountable for the accuracy of its content. The Document Management Organization will assist the author by providing word processing and graphics support such as templates and fonts.

#### 20.1.3 Formatting Documents

All documents submitted to the Systems Operation Support Book Boss by a SOS Engineer staff should be in Microsoft Word format which will be sent to Document Management Organization (DMO). The DMO numbers the document, reviews it for completeness and format accuracy.

#### **20.1.4 Importing Documents**

All documents submitted to the Systems Operation Support Book Boss should be in soft copy. Soft copy should be sent via electronic mail as an attachment .

#### **20.1.5 Exporting Documents**

Requests for documents may be made by telephone, in person, or by electronic mail.

#### **20.1.6 Metadata Maintenance**

See Chapter 10 Metadata Administration.

### **20.2 On-Site (DAAC) Baselined (CDRL/DID) Document Maintenance**

#### **20.2.1 Authoring Documents**

The assigned engineer will create all source material (text, graphics files, etc.) per CDRL/DID preparation instructions & be accountable for the accuracy of its content. The DAAC's Book Boss will oversee the development of the documents and act as the interface between DMO and the DAAC's assigned engineers.

The Document Management Organization will assist the author by providing word processing and graphics support such as templates and fonts.

#### **20.2.2 Formatting Documents**

All documents submitted to the DAAC's Book Boss should be in MS Word format which will be sent to Document Management Organization (DMO). The DMO numbers the document, reviews it for completeness and format accuracy.

#### **20.2.3 Importing Documents**

All documents submitted to the DAAC's Book Boss should be in soft copy and if possible in hard copy. Soft copy should be sent via electronic mail as an attachment and hard copy can be hand delivered to Systems Operation Support Library.

#### **20.2.4 Exporting Documents**

Requests for documents may be made by telephone, in person, or by electronic mail.

#### **20.2.5 Metadata Maintenance**

Science Coordinator technically interfaces with the Science Computing Facilities by updating Interface Control Documents (ICD).

## **20.3 Maintenance of Baselined ECS Documents in Baseline Manager Tool**

The Baseline Manager Tool (XRP-II) will be used to record the change history and updates to post current revisions to the Baselined ECS documents. This tool will also be used to provide the Master Index for the Systems Operation Support Library.

## **20.4 Document Metadata Insertion Subscription**

The Systems Operation Support Library is the repository for all Systems Operation Support Maintained documents (both hard copy and electronic). COTS documentation will be physically located in the library in it's own section. Documentation available on CD ROM will be located in a separate cabinet. Documentation available on-line will be posted in the Systems Operation Support Library and on the Document Management Server.

## **20.5 Document Repository and Maintenance**

### **20.5.1 Data Management Organization (DMO)**

Data Management Organization administering the project requirements for data management and for providing efficient and cost-effective distribution, storage, maintenance, and retrieval of these data. The documents and data managed by this function consist of Contract Data Requirements List (CDRL) items and other documents required by contract; materials that support milestone reviews and other presentations; technical papers and white papers; and other pertinent data such as contract correspondence, progress reports, and background information.

To make documentation readily available, DMO has established a data management process including electronic distribution via the ECS Data Handling System (EDHS), (<http://edhs1.gsfc.nasa.gov>.)

#### **20.5.1.1 Posting/Retrieval of Documents from ECS Data Handling System (EDHS) Server**

Baselined ECS Document will be posted in two format Word and PDF.

### **20.5.2 System Monitoring Center (SMC)**

The SMC servers as the distribution point for:

1. Staging area and distribution for ECS Custom/COTS Software deliveries.
2. Medium for the distribution of non-contractual documentation to the sites. Documents such as README file , COTS electronic instructions, Technical white papers, CCRs, NCR Workaround instructions, database scripts repository etc....
3. Maintains a copies of all Deliverables can include, but are not limited to, binaries, executables, Toolkit deliveries, test data, NCR workarounds, README files, general instructions, etc.

Information can be retrieved from the SMC by accessing the Website. The URL is as follows (<http://m0mss01.ecs.nasa.gov/smc/>)

### **20.5.2.1 Posting/Retrieval of Documents/Software from System Monitoring Center (SMC) Server**

The Systems Monitoring Center Staff SMC will be responsible for the dissemination of information provide to the SMC. Information can be provide from a variety of sources such as EDF, DAACs, and others. The submitter will notify the SMC staff (via phone, pager, E-mail, or CC Mail) that the files are ready. The software and the supporting documentation can neither be pushed to the sites or pulled by the sites for installation.

Documents will be posted in two format PDF and Word.

### **20.5.3 Configuration Management and Data Management**

CM organization will serve as the central point for the dissemination of Baselined COTS Documentation, Technical Directives, Pre-Ship Review Documentation, Version Description Documents, Site Specific Build Plan etc...

Information can be retrieved from the CM by accessing the Website. The URL is as follows (<http://cmdm.east.hitc.com/baseline/>) or (<http://pete.hitc.com>)

#### **20.5.3.1 Posting/Retrieval of Documents/Software from Configuration Management and Data Management Server**

Information being disseminated by this site must have been approved by the CCB.

Documents will be posted in two format PDF and Word.

## **20.6 Retrieval of HTTP Formatted Documents**

Baselined (CDRL/DID) ECS Documents can be retrieved in PDF and Word format.

## **20.7 Systems Operation Support COTS Document & Software Maintenance**

### **20.7.1 COTS Library Database**

The COTS library database designed in Microsoft Access is a means of controlling and maintaining Commercial Off the Shelf (COTS) documentation and software residing in the library. Systems Operation Support personnel have access to the library database through the Document Management Server (DMS). The database enables Systems Operation Support personnel to locate and retrieve document information. By using any of the available fields in the database, the user has the ability to search the contents of it. The library database search provides the user adequate information to retrieve the most current version of a document. Requesting COTS documentation may also be made via the database in which the Systems Operation Support Librarian will receive notice as soon as the request is sent.

### **20.7.2 Document Access Control**

The Libraries database enables Systems Operation Support personnel to locate and retrieve document information. Only the librarian has the capability to add, edit, and delete. Systems Operation Support personnel will have access to this database for visualization purposes via the Document Management Server.

### **20.7.3 COTS Library Reports**

COTS Library inventory reports are generated as requested.

### **20.7.4 On-Site COTS Document & Software Maintenance**

ECS products deployed to the operational sites that has been released for operational use is maintained in the M&O Documentation and Software COTS Library maintained at each site (On-Site SW Library). Site personnel maintain partitioned libraries to facilitate access control of science software and other software not developed by ECS. Site personnel are responsible for any CM activities concerned with this library

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## 21. COTS Hardware Maintenance

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In this section, discussion of commercial-off-the-shelf (COTS) hardware maintenance support includes COTS hardware procured for the ECS Project and some Government furnished property (GFP).

The following documents are referenced in this section:

- Property Management Plan for the ECS Project 602-CD-001-002
- Functional and Performance Requirements Specifications, 423-41-02
- ECS Performance Assurance Implementation Plan 501-CD-001-004
- Environmental Control Plan for the ECS Project 532-CD-002-001
- Maintenance and Operations Management Plan, 601-CD-001-004
- Version 2.0 Operations Tool Manual 609-CD-003-001
- Version 2.0 COTS Maintenance Plan for the ECS Project, 613-CD-003-001
- Version 2.0 Integrated Support Plan for the ECS Project, 616-CD-002-001
- Replacement Parts List and Spare Parts List 618-CD-002-001

### 21.1 COTS Hardware Maintenance - General

Overall Responsibility for the management of COTS hardware maintenance rests with the ILS Office. Daily implementation of hardware maintenance policy is the LMC's responsibility. Issues regarding COTS hardware maintenance policy are to be addressed to the ILS manager through the ILS Maintenance Coordinator, using the contact procedures found in the last sentence of this section.

COTS hardware maintenance consists of preventive and corrective maintenance. COTS hardware preventive maintenance is the responsibility of the contracted COTS hardware maintenance providers. COTS hardware corrective maintenance is the responsibility of the contracted COTS hardware maintenance providers, and/or the Local ILS Maintenance Coordinator (LMC ) using local DAAC resources. The LMC is the DAAC's local point of contact for directing and coordinating corrective maintenance of ECS COTS hardware. COTS hardware maintenance support is available from the contracted COTS hardware maintenance providers according to the terms specified in each maintenance contract. Some COTS hardware is not covered under a maintenance contract. This equipment is supported with spares located on site at the DAAC, or with centralized EDF spares; or by time and materials contract support. Generally, this spare equipment consists of Monitors, Keyboards, Mice, and a variety of boards. To facilitate easy tracking of maintenance spares at each DAAC, the following method of

identification will be used: in ILM, the ECSNAM for the spares will be the site name with “MAINT” added to the end [EDCMAINT, NSIDCMAINT, etc.]. The LMC ensures that requirements of this section are complied with by all COTS hardware maintenance providers and that accurate and timely information from the DAAC is entered in the Inventory-Logistics-Maintenance (ILM) System. **Instructions on the use of ILM are in chapter 27 of this manual.** The integrated logistics support (ILS) Maintenance Coordinator is a staff position in the ILS office, which is under the Maintenance and Operations (M&O) manager’s area of responsibility. The ILS Maintenance Coordinator is available during East Coast normal work hours to provide assistance and guidance to the LMC in obtaining COTS hardware maintenance when normal efforts have been unsatisfactory. The ILS Maintenance Coordinator may be reached via the Internet, telephone, or FAX with the Internet being the preferred method. The Internet address is [ilsmaint@eos.hitc.com](mailto:ilsmaint@eos.hitc.com); the telephone number is 1-800-ECS-DATA, select option #3 then dial 0727 or 4180. The FAX number is 1-301-925-0741.

### **21.1.1 Corrective Maintenance**

Corrective maintenance is the unscheduled repair of equipment, to include fault detection, diagnosis, isolation, and resolution through line replaceable unit (LRU) repair or replacement. The maintenance of hardware items may be performed on site by the LMC or the contracted maintenance provider, or by returning the failed component to the maintenance depot for repair or replacement. COTS hardware corrective maintenance will be documented using procedures in this section and Section 8.1, Problem Management; Section 9, Configuration Management Procedures and the safety requirements of Section 21.1.4

### **21.1.2 Preventive Maintenance**

EMASS and Storage Technology automated tape library robots are currently the only hardware requiring scheduled preventive maintenance. Preventive maintenance is performed by the original equipment manufacturer (OEM) on this equipment. OEMs are expected to coordinate preventive maintenance visits to the DAAC with the LMC. LMCs will record on the maintenance work orders (MWO) any downtime experienced as a result of preventive maintenance.

### **21.1.3 Configuration Management**

Configuration Management (CM) requirements are addressed in Section 9 of this document. The LMC ensures compliance with the CM requirements resulting from a hardware maintenance action.

### **21.1.4 COTS Hardware Maintenance Safety**

Hardware maintenance will be accomplished in a manner that ensures personnel and equipment are protected from harm. Guidance for establishment of safety practices, standards, and procedures is found in Section 6 of the ECS Performance Assurance Implementation Plan (PAIP), 501-CD-001-004. The LMC will ensure that these safety procedures, as well as

applicable local safety requirements, are known and observed by local site support personnel or COTS hardware maintenance providers during COTS hardware maintenance.

COTS hardware safety practices include electrostatic discharge (ESD) protection. The ESD program will be locally developed by the LMC using the ECS Environmental Control Plan, 532-CD-002-001 and applicable DAAC procedures for guidance. When not being worked on or when outside protected areas, electronic parts and assemblies are to be covered by ESD protective covering or packaging. During installation or removal of electronic parts or LRUs, a common ground will be established between the technician, work area, the part, and the equipment it is to be installed in/removed from. It is the responsibility of the LMC to ensure compliance with these safety procedures by the hardware maintenance provider and site personnel.

## **21.2 COTS Hardware Maintenance - Contract Information**

The ECS procurement organization is located at the ECS development facility (EDF) and is responsible for contracting for COTS hardware maintenance. Cost and support considerations may result in COTS HW maintenance being provided by a third party provider. Questions or comments concerning COTS hardware maintenance are to be directed to the ILS Maintenance Coordinator, who can be contacted using contact information contained in Section 21.1, COTS Hardware Maintenance - General.

### **21.2.1 COTS Hardware Maintenance Contract Database**

Information related to COTS hardware maintenance contracts is contained in a database at the ILS Office and is used to manage maintenance contracts. The LMC can obtain extracts of maintenance contract information via the Internet on the ILS web page at <http://dmsserver.gsfc.nasa.gov/ils/intro.htm>. Information fields in the ILS web page are updated periodically by the ILS Maintenance Coordinator.

Generally, COTS hardware maintenance providers require an access, or site, code and/or the serial number of the host equipment to verify that the failed item is covered under a maintenance contract. For example, if maintenance were requested for a terminal/monitor or disk drive, the serial number of the parent workstation or server would need to be provided to the maintenance provider. The serial number may also be the access code for that provider. The information needed by the various COTS HW maintenance providers to verify that maintenance is authorized is specified on the ILS web page. DAAC site-specific site access numbers/site codes/contract numbers, if required, are also listed on the ILS web page. For some COTS HW maintenance providers, names of authorized contact persons are required. The number of authorized contact persons varies with the different maintenance providers. The ILS Maintenance Coordinator, in coordination with the LMC, arranges with the COTS HW maintenance provider for specified personnel to become an authorized contact person. It is the responsibility of the LMC to provide to the ILS Maintenance Coordinator the name changes to the authorized contact list as soon as known. The LMC will identify changes as a permanent or temporary change and, if temporary, the inclusive dates of the change. A temporary change may occur when the authorized contact

person is ill, on vacation, in training, or other short-term change of work availability status has occurred or is expected to occur.

### **21.3 Hardware Repairs - Standard**

Users/operators of ECS hardware should report hardware/system problems to the site's LMC for resolution. Users, operators, and support personnel who encounter a HW problem will report the problem according to Section 8: Problem Management. LMCs will create the MWO in ILM using procedures contained in Chapter 27. The LMC will provide timely feedback to the user/operator on the resolution of the problem. The maintenance role of the LMC includes: the following:

- (1) receiving notification of HW problems,
- (2) opening and closing the MWO,
- (3) dispatching the appropriate repair person [system administrator (SA), network administrator (NA), or vendor repair technician].
- (4) updating MWO with repair efforts in a timely manner as soon as possible following resolution the problem.
- (5) capturing, recording and reporting problems and solutions for future reference - including part numbers, serial numbers, location, and EIN number.

The ILS Maintenance Coordinator: is responsible for:

- (1) tracking MWO status,
- (2) reviewing MWO and repair actions for appropriateness and completeness
- (3) requesting missing MWO information from LMC
- (4) updating ILM based on property record actions from the MWO.
- (5) identifying support problem areas.

#### **21.3.1 Hardware Problem Reporting**

Once a failure occurs, the operator, SA and/or NA will isolate the problem to its source (i.e., Operating System, COTS application software, ECS custom software, science software, network, or COTS hardware) using the actions in Table 21.3-1, DAAC Hardware Problem Reporting Procedures.

**Table 21.3-1. DAAC Hardware Problem Reporting Procedures**

Step	Occurrence	Action
1	System problem discovered by an SA, NA, or operator,	<ul style="list-style-type: none"> <li>a. Review error message against the applicable hardware operator manual.</li> <li>b. Verify that power, network, and interface cables are connected and functioning properly.</li> <li>c. Run internal systems and/or network diagnostics.</li> <li>d. Review system logs for evidence of previously related problems or configuration changes that may be contributing to the problem.</li> <li>e. Attempt to reboot the system</li> <li>f. If the problem is fixed, complete a Remedy Trouble Ticket using Section 8 procedures.</li> <li>g. If the problem is not fixed, and is determined to be hardware related, either prepare an MWO or notify the LMC. The LMC will prepare an MWO with status code "O" for open and either notifies the maintenance contractor or replaces the failed component with on-site spare (if available).</li> </ul>

**21.3.2 Hardware Corrective Maintenance Actions**

Hardware problems are forwarded to the LMC. The LMC will attempt to identify the cause of the problem and employ DAAC resources to resolve the problem. If unable to correct the problem using DAAC resources, the LMC arranges for on-site maintenance by the appropriate maintenance provider in accordance with Section 21.3.4, Contract On-Site Hardware Maintenance

**Table 21.3-2. Hardware Corrective Maintenance Actions (1 of 2)**

Step	Occurrence	Action
1	COTS HW problem not resolved by initial troubleshooting by operator, SA or NA.	<ul style="list-style-type: none"> <li>a. LMC contacted or notified via MWO or by operator, SA or NA</li> <li>b. LMC opens MWO and adds any cross-reference information for related open Remedy Trouble Ticket (if existing)</li> </ul>
2	LMC attempts to identify cause of problem.	<ul style="list-style-type: none"> <li>a. Reviews the MWO (if operator, SA or NA initiated one).</li> <li>b. Verifies actions and results to date by contacting SA and/or NA.</li> <li>c. Performs initial troubleshooting, including that described in the equipment manuals.</li> <li>d. Records result in the MWO.</li> </ul>

**Table 21.3-2. Hardware Corrective Maintenance Actions (2 of 2)**

Step	Occurrence	Action
3	Problem resolved by LMC or local staff.	<ul style="list-style-type: none"> <li>a. If problem can be resolved without hardware replacement (e.g. re-seat component, cable, etc):               <ul style="list-style-type: none"> <li>1) Correct problem, and verify resolution.</li> <li>2) Record actions taken and enter status code "A" in the MWO.</li> </ul> </li> <li>b. If problem can be resolved by replacement of failed LRU with maintenance spare:               <ul style="list-style-type: none"> <li>1) Replace failed LRU and record following in MWO:                   <ul style="list-style-type: none"> <li>a) Part number, serial number, and model/version number of replaced LRU</li> <li>b) Part number, serial number, and model/version number of new LRU</li> <li>c) Down time (elapsed hours/minutes)</li> <li>d) Delay time identified by reason</li> </ul> </li> <li>2) CM requirements are accomplished following procedures in Section 9.</li> <li>3) Order replacement of failed LRU in accordance with Section 21.4.1.</li> <li>4) Route failed LRU in accordance with Section 21.4.2.</li> <li>5) LMC records actions taken to resolve the problem in the MWO</li> <li>6) LMC forwards completed MWO by recording status code "A"</li> </ul> </li> </ul>
4	Problem not resolved by LMC or local staff.	<ul style="list-style-type: none"> <li>a. LMC notifies the maintenance contractor using the information from the ILS web page, providing the telephone number of the vendor and access code needed to obtain support or</li> <li>b. LMC invokes return-to-depot support where appropriate,</li> <li>c. LMC request authorization from ILS Maintenance Coordinator for use of Time and Materials support if that is needed.</li> <li>d. LMC will record all the information in the MWO, to include: make, model, serial number, description of problem, and repair priority of the problem.</li> </ul>

**21.3.3 Contract On-Site Hardware Maintenance**

When on-site hardware maintenance support is necessary, the LMC will notify the applicable maintenance contractor and request assistance. The call for support will be documented in the MWO by the LMC, noting the date and time the contractor was called. It is important that all vendor maintenance activities start and stop times associated with the activities are recorded in the MWO. This is the only means of measuring, and managing the maintenance vendor's contractual performance in support of the ECS system availability goals. Data fields have been specifically created in the MWO to capture this information. Refer to Table 21.3.4-1 for more information about obtaining on-site COTS hardware maintenance support.

**Table 21.3.4-1. Obtaining On-Site Hardware Maintenance Support (1 of 3)**

Step	Occurrence	Action
1	Local support effort did not resolve the problem.	<ul style="list-style-type: none"> <li>a. LMC gathers information needed to obtain contract maintenance support and records it in the MWO.                             <ul style="list-style-type: none"> <li>1) Make, model, serial number, and location of failed systems.</li> <li>2) Description of problem and symptoms.</li> <li>3) Criticality of the COTS hardware experiencing the problem.</li> </ul> </li> <li>b. Using information from the ILS web page the LMC determines:                             <ul style="list-style-type: none"> <li>1) Name of maintenance provider</li> <li>2) Telephone number of the maintenance provider's technical support center</li> <li>3) Access code needed to obtain support.</li> <li>4) Site authorized contact person(s).</li> </ul> </li> </ul>
2	LMC calls the appropriate support provider's technical support center for maintenance.	<ul style="list-style-type: none"> <li>a. Provides information from Step 1a above to the maintenance provider to establish a need for on-site support.</li> <li>b. Obtains a case reference number from the COTS hardware maintenance provider</li> <li>c. Informs the providers technician to supply a copy of dispatch trouble ticket with company name, date/time of arrival and departure, PN and SN of all equipment removed and or installed, and a narrative of problem and action taken, or</li> <li>d. Updates the MWO to reflect date/time of the call, all actions, and case reference</li> </ul>
3	LMC actions	<ul style="list-style-type: none"> <li>a. Jointly determine between maintenance contractor and site operations staff an acceptable time to bring the equipment down for maintenance [only applicable when entire device is down. Coordination to schedule down time is only required for a functional, but impaired, device]                             <ul style="list-style-type: none"> <li>1) Obtain tentative time from operations, then obtain concurrence from appropriate maintenance contractor.</li> <li>2) Obtain information from the maintenance vendor such as availability window of technician and actions needing to be accomplished prior to the technicians arrival.</li> <li>3) Repeat process until an agreed upon maintenance time is obtained.</li> </ul> </li> </ul>

**Table 21.3.4-1. Obtaining On-Site Hardware Maintenance Support (2 of 3)**

Step	Occurrence	Action
4	Maintenance technician arrives at the site.	<ul style="list-style-type: none"> <li>a. LMC arranges for site access using local established procedures.</li> <li>b. Records arrival time in MWO.LMC request for a copy of dispatch trouble ticket with company name, date/time of arrival and departure, part number &amp; serial number of all equipment removed and or installed and narrative of problem and action taken.</li> <li>c. If required, LMC requests System Administrator site Help Desk, or other appropriate and authorized personnel to shut down the machine at the predetermined time so that corrective action(s) can begin. Note that any user affected by this action must be notified prior to the machine/system shutting down.</li> <li>d. LMC escorts maintenance technician to the hardware</li> <li>e. Ensures maintenance provider's technician places LRU's on an anti-static mat when working on them.</li> <li>f. Ensures the maintenance provider technician places anti-static strap on wrist and connect to a common ground when handling LRU's that can be adversely effected by an electrical charge</li> <li>g. LMC assists the maintenance technician in resolving the problem. This includes:               <ul style="list-style-type: none"> <li>1) Arranging for a demonstration of the problem (if possible)</li> <li>2) Arranging for the equipment to be shut down.</li> <li>3) Obtaining site available technical references, when needed</li> </ul> </li> </ul>
4a	Maintenance technician corrects the problem by replacement of parts.	<ul style="list-style-type: none"> <li>a. If a part is replaced, the LMC accomplishes the following:               <ul style="list-style-type: none"> <li>1) Obtains from the failed part or the maintenance technician:                   <ul style="list-style-type: none"> <li>a) serial number, equipment identification number (the EIN number on the silver label), and model/version</li> </ul> </li> <li>2) Obtains from the new part:                   <ul style="list-style-type: none"> <li>a) part number, serial number, and manufacturer's model number (if different from part removed, a configuration change request [CCR] is required)</li> </ul> </li> <li>3) Updates the MWO with following information:                   <ul style="list-style-type: none"> <li>a) actions taken to correct the problem.</li> <li>b) part number, serial number, and model/version, and EIN (if applicable) of the old and new item</li> <li>c) name of the item replaced</li> <li>d) arrival date and time</li> <li>e) time and date corrective action started</li> <li>f) time and date corrective action completed</li> <li>g) any delay time experienced in completing the corrective action and reason for delay time to repair</li> </ul> </li> </ul> </li> </ul>

**Table 21.3.4-1. Obtaining On-Site Hardware Maintenance Support (3 of 3)**

Step	Occurrence	Action
4b	Maintenance technician corrects the problem without replacement of parts	a. If no parts were replaced, the LMC updates the MWO with: <ol style="list-style-type: none"> <li>1) Actions taken to correct the problem.</li> <li>2) Time and date technician arrived</li> <li>3) Time and date repair was started and completed [these times are required to determine RMA data].</li> </ol>
4c	LMC requests the SA to make the system functional	a. Sysadmin restores data, operating system, patches or other SW items to render the system functional. b. Annotates in the MWO that the sysadmin has been notified to restore data. c. Sysadmin notifies LMC upon completion of the requirement
4d	Maintenance technician does not resolve the problem	a. LMC request the Maintenance vendor provide additional technical and or managerial resource to resolve the problem after repair efforts have been underway for 24 hours without resolution b. LMC notifies ILS Maintenance Coordinator that problem repair effort as been delayed, and escalated. c. LMC documents all escalation activity in the MWO until further action is taken.
4e	LMC ensures	a. Receipt of a completed copy of the dispatch trouble ticket from the vendor b. The information from the vendor's ticket is consistent with the information in the MWO
5	LMC	a. Update the MWO with the following information: <ol style="list-style-type: none"> <li>1) When the call was made, and to which support provider.</li> <li>2) Date and time technician made initial contact.</li> <li>3) Date and time technician arrives.</li> <li>4) ALDT reason and duration.</li> <li>5) When repair is complete and support technician leaves.</li> <li>6) Hours chargeable to hard down time and soft down time.</li> </ol>
6	LMC reports actions taken	a. Obtains the authorization of the operation supervisor to make the change. b. Ensures the Configuration Control Board is properly notified of the configuration alterations and requests a formal change using procedures in Section 8.
7	LMC forwards	a. A completed MWO to the ILS Maintenance Coordinator via nightly updates to the SMC by changing status code on MWO to "A". b. A copy of MWO and the vendor's dispatch trouble ticket.
8	LMC files	a. A copy of vendors dispatch sheets, and related documents in a permanent file and references the MWO or files them with copy of the MWO.
9	LMC verifies	a. Property changes resulting from the MWO are recorded in subsequent updates to the property inventory report.

### 21.3.4 Return-to-Depot Support

In some cases the OEM does not provide on-site maintenance. [Refer to the ILS web page for details.] Instead, return-to-depot maintenance support is provided whereby an advance replacement LRU is requested from the vendor by the LMC prior to returning the failed repair. If advance replacement is not provided, then the LMC must return the failed item to the appropriate repair center using procedures contained in Section 21.4-2.

**Table 21.3.5-1. Procedures for Obtaining Return to Depot Service**

Step	Occurrence	Action
1	LMC contacts	a. The appropriate hardware maintenance provider, using information from the ILS WEB page (reference Section 21.2.1 COTS Hardware Maintenance Contract Database
2	LMC requests	a. Advance replacement LRU form the appropriate hardware maintenance provider with shipping instructions prior to returning the failed unit.
3	LMC annotates	a. The expected delivery time, RMA#, carrier information, and the PN, SN, EIN, and suspected problem of the failed item b. Add/move items into MWO as they become available.
4	LMC receives	a. New LRU with RMA authorization.
5	LMC packs	a. The failed LRU using the carton containing the new item following b. The instructions received with the advance replacement part.
6	LMC removes	a. The NASA Property Sticker (silver in color, also called EIN Tag Number) prior to packing the item for shipment. The sticker will be attached to the work order paperwork, and forwarded to the ILS Property Manager for accountability in ILM.
7	LMC applies	a. Address label furnished with the advance replacement to the carton.
8	LMC enters	a. In the MWO, the RMA number from the carton containing the part to be returned
9.	LMC packs	a. The box with failed item and provides a brief description of the problem.
10	LMC annotates	a. In the MWO the RMA#, date shipped to vendor, and expected receipt or return of item; as well as a description of the problem b. .In the MWO the updated inventory changes to the hardware following receipt and reinstallation of the repaired unit.
11	LMC forwards	a. The MWO to the ILS MC by entering status code "A" on the MWO.

**Table 21.3.5-2. Procedure for Equipment Advance Replacement (1 of 2)**

**Type 1: Swap [Original LRU not returned following repair]**

<b>Step</b>	<b>Occurrence</b>	<b>Action</b>
1	LMC requests	a. The appropriate hardware maintenance provider, using information from the ILS WEB page (reference Section 21.2.1 COTS Hardware Maintenance Contract Database), to provide advance replacement if on-site support is not contracted.
2	LMC assures	a. MWO is annotated with failed items PN, SN, EIN, and actions as they become available.
3	LMC obtains	a. RMA number and shipping instructions from the repair vendor.
4	LMC receives	a. New advance replacement with RMA authorization.
5	LMC attaches	a. New EIN sticker on replacement LRU, and creates new item in ILM.
6	LMC installs	a. Advance replacement LRU
7	LMC packs	a. The failed LRU using the carton containing the new item following instructions received with the advance replacement part. b. Remove the NASA Property sticker (also called EIN Tag number, and silver in color) prior to packing the item for shipment.
8	LMC attaches	a. Removed EIN sticker to MWO so LRU can be properly archived.
9	LMC applies	a. Address label furnished with advance replacement to the carton.
10	LMC enters	a. RMA number to the carton containing the part to be returned (if not already entered on the address label).
11	LMC logs	a. Updated information in the MWO (cite RMA#, return address, date shipped to vendor).
12	LMC packs	a. The box(es) of the failed items, and includes a brief description of the problem.
13	LMC updates	a. The MWO status to "A" for Audit with the new information.
14	LMC forwards	a. The MWO, with the updated inventory hardware changes to the SMC.

**Table 21.3.5-2. Procedure for Equipment Advance Replacement (2 of 2)**

**Type 2: Loaner [Original LRU repaired and returned]**

Step	Occurrence	Action
1	LMC requests	a. The appropriate hardware maintenance provider, using information from the ILS WEB page (reference Section 21.2.1 COTS Hardware Maintenance Contract Database), to provide advance replacement if on-site support is not contracted.
2	LMC assures	a. MWO is annotated with failed items PN, SN, EIN, and actions as they become available.
3	LMC obtains	a. RMA number and shipping instructions from the repair vendor.
4	LMC receives	a. New advance replacement with RMA authorization.
5	LMC installs	a. Advance replacement / Loaner LRU. Note: This LRU is NOT government property, it is only a loaner. Do NOT place an EIN sticker on this loaner.
6	LMC packs	a. The failed LRU using the carton containing the new item following instructions received with the advance replacement part. Remove the NASA Property sticker (also called EIN Tag number, and silver in color) prior to packing the item for shipment
7	LMC attaches	a. Removed EIN sticker to MWO so LRU can be properly archived. Note: Even though this LRU will be returned when fixed, the EIN will be removed. Following return a new EIN will be attached to the device, and in the note section of ILM annotate both old and new EIN for historical reference.
8	LMC applies	a. Address label furnished with advance replacement to the carton.
9	LMC enters	a. RMA number to the carton containing the part to be returned (if not already entered on the address label).
10	LMC logs	a. Updated information in the MWO (cite RMA#, return address date ship to vendor).
11	LMC packs	a. The boxes of the failed items and includes a brief description of the problem
12	LMC updates	a. The MWO status to "A" for Audit with the new information.
13	LMC forwards	a. The MWO with the updated inventory hardware changes to the SMC.
14	LMC receives	a. The repaired LRU back from the vendor. A new EIN will be attached, and annotated into ILM.
15	LMC reinstalls	a. Original LRU, and removes loaner unit for return to vendor following procedures 8-13 above for shipment of loaner

## 21.4 Maintenance Spares

The maintenance contractor performing the maintenance normally provides replacement LRUs. However replacement LRUs will typically be obtained from within the metropolitan area where the DAAC is located, and will seldom be stocked on the DAAC site. The ECS ILS Office may procure selected maintenance spares to provide a more rapid return to service for failed critical units and to guarantee their availability. These spares are to be used as a last resort and must be replaced quickly. The use of a spare in order to keep a system operational does NOT remove

responsibility for having the original LRU repaired. The ECS ILS Office will also procure selected spares for hardware items that do not have contracted on-site maintenance. Project spares may be centrally stocked at the EDF, stored on-site in the DAAC property room, or reside as installed spares in equipment.

Maintenance spares are procured and replenished by the ECS ILS Office using the process identified in Paragraphs 4.6.3 and 4.6.4 of Release B COTS Maintenance Plan, document 613-CD-003-001; and Section 23, Property Administration of the 611 document. Spares allocated to the DAACS will be managed at the DAAC by the LMC using guidance from the above referenced documents and appropriate local DAAC policies and procedures.

### 21.4.1 Use of Maintenance Spares

The LMC will control the use of on-site maintenance spares. Centrally stocked spares can be requested from the ILS Maintenance Coordinator using procedures in Section 21.1. Installation of maintenance spares is performed by the LMC (if qualified) or the COTS hardware maintenance contractor under oversight of the LMC, who ensures procedures in Section 21.3 are followed.

**Table 21.4.1-1. Centrally Stocked Spares**

Step	Occurrence	Action
1	LMC opens	a. An MWO to request a spare with a reason and description of the problem.
2	LMC enters	a. An "O" as OPEN in the MWO
3	LMC sends	a. An email to ILS MC
4	LMC receives	a. An email from the ILS MC authorizing the shipment of the spare from the the ILS PA b. The spare from the ILS PA, and ships the failed LRU to the ILS PA or the repair vendor as described by the ILS PA or ILS MC.
5	LMC ensures	a. Individuals installing and deinstalling the spare adhere to the Electrostatic standards by standing on an anti-static mat with anti-static wrist connection with a common ground
6	LMC prepares	a. The shipping label on the carton, clearly displaying the RMA# if required. NOTE the shipping address may differ from the maintenance contractor's main address
7	LMC updates	a. MWO with repair information, such as start, end, and delay time, PN, and SN of removed/installed items.
8	LMC ensures	a. System is returned to operational status, and notes time. System admin restores data, operating system, patches or other SW items to render the system functional.
9	LMC receives	a. The original, and now repaired, spare from the ILS PA or vendor.
10	LMC returns	a. Loaned spare to ILS PA.
11	LMC updates	a. The MWO, to include spare location, with the EIN and replacement component information such as start, end and delay time, part number and serial number of item removed/installed and forwards the MWO by entering status code "A".

## 21.4.2 Return of Failed LRUs

The LMC is responsible for the return of failed LRUs to maintenance contractors providing advanced replacement depot maintenance support (e.g., systems under return-to-depot support). In such agreements the maintenance provider sends to the site a replacement for a failed component under the condition that the site will return the failed component within a reasonable time, usually not greater than 10 days. If the failed component is not returned the contract is charged the full purchase price for the item not returned. Refer to Table 21.3.5-2. for return instructions.

## 21.5 Non-standard Hardware Support

Non-standard COTS hardware support consists of:

- a) maintenance support outside the PPM (Principal Period of Maintenance),
- b) support covered under a Time and Materials contract, or
- c) escalated support actions by the maintenance support provider.

**Table 21.5-1. Procedure for Time and Material Support**

Step	Occurrence	Action
1	LMC contacts	a. The ILS MC and requests Time and Material support.
2	ILS MC determines	a. If the problem is critical enough to justify Time and Material Support, and then gives the LMC verbal and written approval to use Time and Material support. Not that approval may contain a dollar limit, time limit, and/or approval reference number
3.	LMC contacts	a. The appropriate vendor for Time and Material support (refer to the ILS web page)
4	LMC monitors	a. Time and Material support costs and time for repair, then faxes or emails the information on the service calls to the ILS MC.
5	ILS MC creates	a. Quarterly reports of Time and Material support including funding used.
6	ILS briefs	a. The CCB on the T&M funds status [done quarterly].

### 21.5.1 Escalation of COTS Hardware Support Problem

Hardware support providers have escalation policies. These escalation policies direct increased management attention and/or resources to a problem, based on elapsed time from start of the corrective effort. The LMC may also request a support provider escalation any time the corrective effort is not progressing satisfactorily, by calling the maintenance contractor's technical support center and providing the case number generated when the problem was first reported. The LMC may request assistance from the ILS Maintenance Coordinator in obtaining a satisfactory resolution by using procedures in paragraph 21.1.

### **21.5.2 Low Cost Equipment – Not Repaired**

Wyse terminals, keyboards, and mice are low cost items that are not repaired, because the repair costs would exceed the cost of a new item, but are replaced on a one-to-one basis from either the manufacturer or the ILS Office. Items when supported by a maintenance vendor are replaced as part of the contract. The ILS Office through spare replenishment will replace those items not covered under maintenance contract. Maintenance spares, because they are Government property, will not be disposed of without the direction of the Government. LMCs will request disposition instructions for these items from the ILS Office. They will not be discarded without specific direction from the ILS Office. The disposition request will be made by the LMC following procedures in Section 23 and Property Management Plan for the ECS Project , document 194-602-OPI-001.

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## 22. COTS Software Maintenance

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Software maintenance procedures are current to Drop 5B functionality.

### 22.1 Introduction

The ECS organization provides maintenance and operations for ECS, software, and firmware systems delivered under the ECS contract to the ECS sites. The functions performed by each of the M&O organizations are described in the M&O Management Plan, CDRL 601-CD-001-001. M&O tasks for COTS software support are described in Section 22.1, based on 613-CD-003-001, “Release B COTS Maintenance Plan for the ECS Project” and 194-602-OP1-001, “Property Management Plan for the ECS Project.”

In general, ECS organizations procure, produce, deliver, and document the modifications, and enhancements made to ECS software and firmware. No custom firmware has been identified as part of the ECS program. Commercial off-the-shelf software (COTS SW), firmware, and hardware will be maintained in accordance with the COTS Maintenance Plan, CDRL 613-CD-001-001. The Project maintenance philosophy for software is to provide ECS centralized support for developed items and vendor support for COTS SW.

Specific software support procedures are discussed in this section. ECS Project software consists of COTS, custom-developed, and science software. Science software, developed for use on the ECS project, is the responsibility of the science community (see Section 22.1.3

COTS software maintenance includes:

- License to use COTS support contract with the software vendor for; telephone assistance in resolving COTS SW problems, as well as obtaining patches and upgrades.
- Services required to produce, deliver, integrate, install, validate and document modifications of existing ECS software and firmware. [The DAAC maintenance activity includes: software configuration management (CM) including support for change control, configuration status accounting, audit activities, and software quality assurance (QA). Each site is the CM authority over its own resources subject to EOSDIS delegation of roles for ECS management.]

The site’s LMC, System Administrator (SA) and Network Administrator (NA) will be advised by the ILS Maintenance Coordinator and COTS Software License Administrator on the procedures for handling COTS software upgrades and vendor liaison.

The ECS System Support Office (SSO) provides assistance when COTS software issues exceed the capabilities of the site System Administrator or the Network Administrator to resolve.

#### 22.1.1 COTS Software Maintenance

Operations personnel at the sites accomplish installation of patches, upgrades and software problem isolation. The COTS software vendors support COTS software procured for the ECS

contract. (The term software vendor refers to the company having the legal right to authorize software use and to modify the software code.) COTS software vendor support consists of telephone support for resolution of usage and interface problems, access to an on-line solution database, providing upgrades and patches and resolving COTS software code problems.

The Activity Outline in Table 22.1-1 is an overview of COTS Software Support procedures and the section number where details for performing the tasks can be found. .

**Table 22.1-1. COTS Maintenance - Activity Outline**

<b>Task</b>	<b>Section</b>
Assist System Administrator in obtaining COTS SW support	22
Manage COTS Software Maintenance Contracts	22.1.3
Manage Software Licenses	22.1.4
Interface with CCB (SW License Admin. may go before CCB whenever there is an upgrade in current software version, new patches, or a need to purchase additional software licenses in order to satisfy project requirements. SW License Admin. Should be informed and involved in any overall change to the baseline.)	22.1.4-22.1.5
Obtain COTS Software Support	22.1.6

### **22.1.2 Management of COTS Software Maintenance Contracts**

The ECS procurement office at the EDF contracts COTS software vendor support. After the first year of warranty support, support is contracted for a period of one or more years and extended or modified as operationally required. Information related to COTS software support contracts is maintained in a database used by the COTS Software License Administrator to monitor the expiration dates and contract terms.

For drop 5A, the COTS SW License Administrator will track software licenses via the Inventory database. As a COTS SW vendor support requirement nears its expiration date, the COTS SW License Administrator determines through consultation with the responsible organization, the need for continued COTS software support. The SW License Administrator will issue a CCR to the CCB organization. When the CCR is approved the SW License Administrator will coordinate with the ECS procurement office for extension/modification of the support contract. Requested changes to COTS SW support contracts should be provided by the site System Administrator to the COTS SW License Administrator. The COTS SW License Administrator may be contacted by email at [rcastle@eos.hitc.com](mailto:rcastle@eos.hitc.com) or by dialing 1-800-ECS-DATA, Option #3, then dial extension 0726.

### **22.1.3 Management of COTS Software Licenses**

Functions of the COTS SW License Administrator include the following:

- a. Maintain accountability for all COTS SW licenses procured for the ECS contract. Accountability includes tracking and reporting the as-installed location of all licenses procured. This information is generated from the findings of the software physical configuration audit. Once the software configuration audit has been performed, the software licenses will be tracked by monitoring the status of COTS SW CCRs as they are implemented and through configuration data maintained in Inventory Database.
- b. Assist the SSO organization with the help of the SE/EDS organization in impact analysis of proposed COTS SW upgrades and patches on other COTS SW applications incorporated in the ECS system design. Maintain a database containing license keys of project-purchased COTS SW. The COTS SW installation team (or site) will provide the host identifications to the COTS SW License Administrator, who will then obtain the necessary license keys from vendors for SW installation and populating the COTS SW database.
- c. The SSO organization will distribute SW upgrades, with vendor-provided release notes.
- d. Keep SSO and all other ECS sites informed by providing them with the vendor maintenance necessary to access vendor patch libraries for use in resolution of software problems. COTS software licenses vary by the type of software and the software vendors' policies.

COTS software license types include: floating, per site, specific number of concurrent users, unlimited users, and lifetime use without regard to number of users or location. The quantity and type of COTS software licenses initially required are identified to the ECS procurement office by ECS design engineers. COTS software licenses are received and entered into the Inventory Database by the ILS Property Administrator. The ILS Property Administrator maintains the master copy of COTS SW license agreements (hardcopy). The COTS Software License Administrator will update the COTS software license database.

### **22.1.4 COTS Software Installation and Upgrades**

The COTS software upgrades are subject to appropriate CCB approval before they may be loaded on any platform. The COTS Software Librarian, using procedures contained in Section 9, "Configuration Management," notifies the SSO organization of the upgrades that have been received. The SSO distributes the COTS software upgrades as directed by the CCB. The site System Administrators are responsible for upgrading the software on the host machine and providing follow-up information to the Configuration Management Administrator (CMA), COTS Software Librarian and the COTS SW License Administrator. The site LMC will notify the appropriate personnel when the COTS software is received.

COTS software patches may be provided by the COTS software vendor in response to a DAAC's call requesting assistance in resolving a COTS software problem. The problem may or may not exist at other locations. When a COTS software patch is received directly from a COTS

software vendor (this includes downloading the patch from an on-line source), the DAAC's CCB shall be informed via CCR prepared by the appropriate site personnel. It is the responsibility of the appropriate site personnel to notify the CCB of the patch's receipt, purpose, and installation status, using procedures contained in Section 9, "Configuration Management," and to comply with the CCB decisions. The appropriate site personnel will install the COTS SW patches as directed by the CCB. In addition to providing patches to resolve problems at a particular site, the software vendor will periodically provide upgrades of COTS software in order to improve the product. These upgrades are issued to all licenses covered by a software maintenance contract. Therefore, the COTS software upgrades will be shipped to the ILS PA who receives and enters them into inventory and then forwards the media to the COTS Software Librarian and the licenses/keys to the COTS Software License Administrator. The COTS Software License Administrator coordinates with the appropriate DAAC personnel the installed location, which includes the host name, host id and EIN number of the system. COTS SW License Administrator will update the software license database. When there is a desire to upgrade to a more current version of the software, a CCR must be submitted by the responsible Organization for approval by the appropriate CCB. Once the upgrade is approved and installed, the DAAC personnel will notify the COTS software license administrator of the configuration change. The COTS software license administrator will notify the ILS PA to update the ECS records and will update the software license database. The Configuration Management records will be updated per the as-installed status of Engineering Change Order attached with each CCR.

### **22.1.5 Obtaining COTS Software Support**

COTS SW support involves both site capability and contracted support. The site System Administrator (SA), Network Administrator (NA), and site Software Maintenance Engineer provides site capability. The COTS SW vendor provides contracted support. When the appropriate site personnel confirms that a problem is attributed to the COTS SW, the COTS SW vendor's technical support center is contacted by authorized personnel at the site.

The software vendor's technical support center will verify contract support authorization and then assist in pinpointing the COTS SW problem to provide a recommended solution. The solution may comprise of a patch, work-around, or include the fix in a future release. If a patch exists to correct the problem, the patch will be identified and provided by the software vendor over the Internet or mailed to the requester. If a patch is required but unavailable, the site and vendor together determine the seriousness of the problem. In cases where the problem is critical, a temporary patch or work-around may be provided. If non-critical, the solution to the software problem may be scheduled by the software vendor to be incorporated in a future update or release. (NB: The DAAC and ESDIS CCBs must authorize the patch to be installed as a permanent installation. This decision may be made after-the-fact. That is, if the patch is needed in order to proceed with operations, notify the appropriate DAAC personnel of the requirement in accordance with Section 9, "Configuration Management." Applicable requirements of Section 8.1, "Trouble Ticket System Procedures," must be followed.) LMC at each site will receive the software and log it appropriately in the Software Inventory.

The COTS Software License Administrator obtains the support authorization codes from the vendors and arranges for specified personnel to become an authorized contact person, based

upon the limitations imposed by the vendor, and the needs of individual DAACs. The software vendor's technical support telephone numbers, the names of personnel authorized to contact the vendor, and the authorization codes will be provided to the site's LMC by the COTS Software License Administrator through the M&O web site entitled "COTS Hardware- Software Maintenance via the following URL"

**<http://dmserver.gsfc.nasa.gov/ils/html/maintsw.htm>**.

Changes to the information in the "COTS Software Support" web site are to be provided to the COTS Software License Administrator as they occur, for updating the web site. Specifically, the need to identify or replace the authorized contact person must be provided by the LMC to the COTS Software License Administrator.

E-mail is the preferred notification method. The site will follow these steps:

- a. Send e-mail to [ilsmaint@eos.hitc.com](mailto:ilsmaint@eos.hitc.com).
- b. If e-mail is not available, call 1-800-ECS-DATA, Option 3; then dial extension 0726
- c. Identify the change as either a permanent or temporary change. A temporary change may occur when the authorized contact person is ill, on vacation, in training, or other short-term change of work availability status has occurred or is expected to occur.
- d. Provide the COTS Software License Administrator the change information as soon as it is known.

### **22.1.6 COTS Software Problem Reporting**

The first person experiencing or observing a potential COTS SW problem will initiate a trouble ticket according to the procedures found in Section 8.1, "Trouble Ticket System Procedures" then forward it to the assigned site person to review the problem. This person will attempt to isolate the source of the problem to system configuration, hardware, network, COTS SW, custom SW, or science SW.

If it is confirmed to be a COTS SW problem, the authorized contact person should contact the vendor's technical support center for assistance. Information on contacting the software vendor's technical support center is in Section 22.1.4.1, "COTS Software Problem Reporting." The appropriate site personnel must annotate all actions inclusive of dates, time, resolutions, and comments in the Remedy Trouble Ticket as the repair progresses. COTS software corrective action reporting follows the procedures contained in Section 8, "Problem Management" and the configuration control requirements contained in Section 9, "Configuration Management," when a configuration item is removed and/or replaced with a different version or release.

One method to troubleshooting the COTS SW problem is to scan the software vendor's web site solutions database to learn of any solutions for similar problems. The software vendor's web site address can be obtained as stated in Section 22.1.6. Another manner to troubleshooting the COTS SW problem is to exercise any software diagnostic routine embedded or down-loadable that will determine the status of the COTS SW on the equipment by reviewing the troubleshooting-diagnostics and corrective actions taken to date. These troubleshooting,

diagnostics, and/or isolation procedures may be contained in the vendor's operational manuals or in locally devised troubleshooting procedures.

COTS SW problems that cannot be corrected using site and contracted software support may be escalated to the ECS SSO. The SSO is staffed with Senior Systems Engineers knowledgeable on COTS SW that can assist in diagnosing the problem.

The site Local Maintenance Coordinator may go directly to the software vendor or to the ILS SW Administrator to obtain an escalation of software vendor support if the software vendor's efforts have not produced satisfactory results within a reasonable period of time. The escalation may result in increased vendor management review of the problem resolution, the assignment of additional resources to resolve the problem, and/or a more highly qualified technician assigned to resolve the software problem.

## **22.2 Custom Software Maintenance**

Multiple baselines may exist throughout the ECS contract. After Version 2, Release 2.0 is operational, the M&O organization may need to modify the configuration as established at each center. The M&O master library was delivered by the release development organization at launch. The Software Change Manager (ClearCase) provides the vehicle to store and maintain the library. The governing policies and minimum developed software component level that may be removed from or reintroduced to (checked-out for maintenance) the master library are defined by the developers' determination of code modules. This topic is detailed in the description of the Software Change Manager and Baseline Manager (XRP-II) tools, (Sections 9.6 and 9.9 of this document, respectively). Software changes are distributed on the basis of Software Configuration Items to the sites' copy of the Software Change Manager and recorded in the sites' copy of Baseline Manager following configuration management procedures defined in the M&O CM Plan (102-CD-001-002) and Section 9 of this document.

Maintenance changes to the ECS baseline may come from any of several sources, e.g.,

- ESDIS CCB directed changes
- Site-level CCB directed changes to Configuration Items (CIs)-- ESDIS will delegate or define which items are to be under site-level control and to what extent those parameters can be changed.
- Developer scheduled modifications or upgrades.
- User or operator initiated Trouble Tickets.

Trouble Tickets (TTs) are written by ECS users, operators, and system administration to address any level of problem they may encounter with a minimum required level of documentation. This topic is addressed in more detail by the ECS Developed SW Maintenance Plan (614-CD-001-002) at section 4.3 and in this document at section 8 "Problem Management." Most of these problems will be fixed locally with minimum overhead requirements for tracking and analysis. The TT Telecon will be used by the SEO to discuss system-level issues that may

- (a) coordinate groups of TTs,
- (b) affect more than a single site,
- (c) will be referred back to the ESDIS Project Office and the ECS development organization,
- (d) and will be worked-off with the necessary coordination and formality of multi-site change or implementation.

The Software Maintenance Engineer records all actions to resolve a problem on the associated trouble ticket within the TT System tool (Remedy). ClearCase serves as the Software Change Manager, providing utilities to maintain a software master library (the operational baseline) and supporting CM functions for version control. The Software Maintenance Engineer can check-out software components for maintenance and check them in for baselining. The Software Change Manager tracks versions of software used in builds as well as provides a tool to perform builds.

Updates to baselined custom software are submitted with the Version Description Documents (VDD) and go through the CCB review process. The software also goes through M&O testing prior to installation. All changes to the operational baseline are recorded and tracked in the Baseline Manager by the CM Administrator (see Section 9 of this document).

The Activity Checklist table that follows provides an overview of Custom Software Support procedures. Column one (**Order**) shows the order in which tasks might be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found. Column five (**Complete?**) is used as a checklist to keep track of which task steps have been completed.

**Table 22.2-1. Custom Software Maintenance - Activity Checklist (1 of 2)**

Order	Role	Task	Section	Complete?
1	Software Maintenance Engineer/CMA	Implementation of Modifications	(I) 22.2.1	
2	SEO	Test Plans & Procedures	(I) 22.2.2	
3	M&O Test Team	Custom SW Installation	(I) 22.2.3	
4	CCB	Scheduling the Release	(I) 22.2.3.1	
5	CMA	Operations & User Notification	(I) 22.2.3.2	
6	SW Maintenance Engineer	Maintenance Changes to the SW Change Manager (ClearCase) Library	(I) 22.2.3.3	
7	SW Maintenance Engineer	Creating SW Build Using the SW Change Manager	(I) 22.2.3.4	
8	CMA & SW Maintenance Engineer	Promoting SW Using the SW Change Manager	(I) 22.2.3.5	

**Table 22.2-1. Custom Software Maintenance - Activity Checklist (2 of 2)**

Order	Role	Task	Section	Complete?
9	SW Maintenance Engineer	Installing the New Release	(I) 22.2.3.6	
10	M&O Team	Obtaining SW Support	(I) 22.2.4	
11	User Services, CMA, Operators	SW Problem Reporting	(I) 22.2.4.1	
12	Problem Investigator	Troubleshooting	(I) 22.2.4.2	
13	SW Maintenance Engineer	Corrective Action Reporting	(I) 22.2.4.3	
14	Science SW Team	Resolve problems, as required	(I) 22.2.5	

### 22.2.1 Implementation of Modifications

Implementation of changes is performed using a controlled build procedure. For each build, each ECS organization selects a responsible engineer (RE). The SEO RE establishes the set of CCRs to be included in the system build. The ECS On-Site, SMC and EOC REs determine which, if any, site-unique extensions are to be applied to the system build. Schedules for implementation, integration, and test at the system and center levels are established. The SEO RE maintains the integrated system and center-specific CCR list and schedule.

The SEO RE maintains the Version Description Document (VDD) that contains:

- The CCRs incorporated into the build and their operational and/or user features
- The build schedule,
- ECS external interfaces affected by the build,
- ECS CIs affected by the build,
- List of ECS documentation (e.g., design documents, procedures, help files, etc.) affected by the build,
- Test program results summary, and
- Test team recommendation.

The initial VDD is provided with Version 2, Release 2.0 by the Independent Acceptance Test Organization. It is then maintained by the Sustaining Engineering Office (SEO) as described in the Developed SW Maintenance Plan, 614-CD-001-003 at Sections 4.3.6 and 4.3.7. It contains not only the as-built documentation, but is supplemented by the as-tested, verified, and accepted documentation as discussed in the Acceptance Testing Management Plan. The document is described in the System Implementation Plan for ECS Turnovers, ECS #301-CD-003-001 which addresses the overall ECS system turnover process (HW, SW, and documents). The SEO RE updates depend on authorized changes.

Appendices are added as necessary to the system level VDD by each center's RE to describe any center-unique additions/modifications to the build. The VDD is published in draft form well in

advance of the build using ECS bulletin boards and electronic distribution. Updates are published as information is gathered. The final VDD is published just prior to installation of the new build into operations.

For a given CCR, the RE (or designated team) to whom implementation of the CCR is assigned uses the configuration controlled local library to obtain the correct version of the source code/files. Using ECS-provided editors, compilers, and build procedures, the RE implements the change, performs programmer testing, and updates the documentation including design, interface, and procedure documents.

The RE may discover that the approved incorporation schedule cannot be met because of unforeseen complexity, changes in priority, or conflicting assignments. Revised implementations, priorities and schedules are brought to the CCR Telecon for discussion. If necessary, a revised CCR and/or incorporation schedule is forwarded to the ESDIS CCB for impact assessment. Typical CCR discussion topics are outlined in Figure 22.2-1.

- |  |
|--|
| <p><u>CCR Discussion Topics</u></p> <ul style="list-style-type: none"><li>• Review and prioritize each CCR opened at each center</li><li>• Review and re-prioritize older CCRs (as required)</li><li>• Review status of open CCRs</li><li>• Review distribution of CCRs by organization, status, priority and age</li><li>• Recommend new/revised assignments of CCRs to organizations/centers</li><li>• Discuss CCR issues with development organizations</li></ul> |
|--|

**Figure 22.2-1. Typical CCR Telecon Agenda**

Upon completion of the modification, the revised source files, data bases/ structures, and documentation are impounded and controlled by the Integration and Test organization at the RE's site using the CM tool. The impounded material is forwarded (if developed at a DAAC, the SMC or EOC) to the SEO for system integration and test. In the case of FOS SW CIs, system integration and test is performed within the EOC.

The golden copy of ECS SW is maintained by the SMC. Required access to the golden copy as well as changes will be guaranteed by logging changes and backing up modifications for later access as required by users, developers, and maintenance personnel under CM guidelines delineated by the ECS CM Plan. SW will also be maintained by local CM at the DAACs.

### **22.2.2 Test Plans and Procedures**

The objective of the test program is to ensure that the CCRs are properly implemented and that defects have not been introduced as a result of the changes. Therefore, both feature (has the CCR

been properly implemented) and regression (revalidation of proper operation of the CI and system) testing at both the system and center levels are critical parts of the test program.

The test function exists within each of the M&O organizations. In the larger organizations, individuals may be dedicated to testing of M&O builds. In the smaller organizations, testing may be performed by personnel who have additional assignments. The test team can include maintenance programmers, vendors, users — any personnel who reported the problem that initiated the upgrade or who use the software. Regardless, the guiding principle is that the maintenance programmer who made a change is not allowed to be the only person who revalidates the program or provides feature testing.

The methodology employed in testing includes:

- Inspection — formal verification by examination of the assembled CI and its design documentation.
- Analysis — formal verification by examination and study of the CI/data base/data structure design and coding.
- Demonstration — formal verification by operating the computer program.
- Review of test data — review of test records and data after the execution of the computer program.

These are categories of testing procedures. The specifics cannot and should not be predetermined, but rather should be responsive to the individual requirements determined by the extent/ impact of changes made to the original CI. M&O testing shall consist of recreating in whole or in-part the same scenarios used in the original acceptance testing.

Using the information in the Version Description Document (VDD) described in Section 22.2.1, the system and center test teams develop test plans for the build. The plans describe:

- The CCRs to be tested;
- The CM baseline(s) to be used;
- The requirements and features to be verified;
- The method of verification including identification of test cases/data sets;
- Acceptance criteria;
- Resource requirements; and
- Schedule of testing.

that are to be used for both feature and regression testing. Test procedures provide the detailed scenarios and test cases/data sets, steps, operator/user actions, analyses, etc., that implement the test plan.

Feature testing is performed through either the development of new test cases and data or the modification of existing test cases and data. Regression testing is performed using standard test

cases with expected test results. When possible, the same test cases and data as were used when the program was originally developed are used. Test cases developed for prior feature testing are also used as part of the test program.

When possible, center-specific testing of system-level change builds will be performed in conjunction with the system test. If this is not possible, center-specific testing will precede the system level testing to allow a controlled increase in complexity during the test program. Should center-specific modifications to the system build be required, center level testing will be performed at the center first and then included in either the initial or follow-on system-level testing.

Test results and analyses which are developed by the test organization(s) are provided to the SEO and center REs. Unacceptable performance during the test program may result in delaying of the entire build or removal of a CCR from the build. Because the test team functions as an independent assessment of the build, it provides its recommendation on the quality and performance of the build to the SEO. A summary of the test program and the test team's recommendation are added to the VDD.

The SEO RE is responsible for review of the test plans and procedures to ensure the adequacy of the test program. Center REs support the SEO RE in this assessment. Status of the test program is also provided to ECS and center management at the weekly status meetings described in Appendix B of the Maintenance and Operations Management Plan.

### **22.2.3 Custom Software Installation**

The Version Description Document (VDD) provides the summary documentation package for each build. The material in the VDD is presented by the ECS M&O test function to the appropriate individual(s) within ESDIS. The VDD material is also presented by the ECS M&O test organization to the appropriate individual(s) within each operational center. If required by ESDIS or the center, results of IV&V or center-unique testing results will be presented by the appropriate organization. Upon review and approval by ESDIS and center management, the build as baselined in the center-specific VDD is authorized for system-wide and center operations.

The following sequence then occurs:

- The VDD undergoes final updates for system and center-specific material identified by ESDIS or the operational centers (e.g., IV&V test results and recommendations, center by center operational installation schedule, etc.).
- The final VDD is published.
- In accordance with the installation schedule, the build is installed at each center along with operational and user documentation updates.
- Controlled Document updates are provided to Document Maintenance and entered into the CM system.
- The CM system is updated to indicate the M&O system and center-specific baselines.

### **22.2.3.1 Scheduling the Release**

Scheduled maintenance should be emphasized as a method of controlling the maintenance function in which the new-release concept already applied to systems is also applied to typical application programs. Emergency fixes are applied as required, but all other repairs or changes are assessed for the determination of an appropriate new-release schedule. There are several benefits to this approach:

--By consolidating the changes to be made to a CI, modifications can be performed more efficiently, e.g., documentation is updated only once, minimizes unnecessary disruptions to ops, decreases costs, etc.

--Since users know their changes will not be acted on immediately, they can give more consideration to which changes they actually need.

--Batched changes can be assessed holistically and more thoroughly evaluated.

--Knowing which applications will be maintained during the monthly/yearly cycle enables management to more effectively prioritize maintenance projects

--Positive control of baseline management between the M&O and Development organizations

### **22.2.3.2 Operations and User Notification**

The Version Description Document (VDD) is the vehicle for communicating the contents, status, feature, schedule, and test results to the ECS stake holders. It is supplemented by test plans, test procedures and test results. Draft and final versions of the VDD and test program documentation are published and distributed to interested organizations internal (e.g., the ECS Development Offices, System Management Office, Quality Office, Science Office, etc.) and external (e.g., ESDIS, DAAC, other Customer, external systems, IV&V contractor, SCFs, user groups, etc.) to the ECS Contractor using ECS bulletin boards and electronic distribution.

### **22.2.3.3 Maintenance Changes to the On-Site SW Change Manager Library**

The golden copy of ECS custom software is maintained at the SMC by the SEO CM Administrator. Required access to the golden copy as well as changes will be guaranteed by logging changes and backing up modifications for later access as required by users, developers, and maintenance personnel under CM guidelines delineated by the M&O CM Plan. Custom software will also be maintained by the CMA at the ECS deployment sites.

The Software Maintenance Engineer (SME) will use the Software Change Manager (ClearCase) to maintain the current software baseline. The CMA and SME will maintain the records in Baseline Manager so that they are synchronized with the Software Change Manager maintenance changes.

SMC provides the upgraded or new custom software to the sites. Each site specifies a temporary directory (a ClearCase VOB) that will receive the software. The site CCB must approve the installation of the software into the site's master library.

When notified by the CMA that the source code has been received and baselined, the Software Maintenance Engineer creates branches in the Software Change Manager, which are created for bugfixes, enhancements, and new development that are under CM control. The Software Maintenance Engineer also sets the configuration specification for the operational environment. Lastly, the Software Maintenance Engineer merges the files.

Refer to the procedures in ECS Work Instruction CM-1-016-1 to manage the branch and merge process.

#### **22.2.3.4 Creating the SW Build Using SW Change Manager (ClearCase)\**

Refer to the procedures in ECS Work Instruction CM-1-023-1 to manage creation of the software build using ClearCase.

#### **22.2.3.5 Promoting Software Using SW Change Manager (ClearCase)**

Tables of SW states (Table 22.2-2 for ECS SW and Table 22.2-5 for Science SW); valid SW state transitions (Table 22.2-3 for ECS SW and Table 22.2-6 for Science SW); and SW promotion levels (Table 22.2-4 for ECS SW and Table 22.2-7 for Science SW) govern the promotion of ECS custom and science SW from developer or maintenance engineering activities into operational strings. SW Change Manager (ClearCase) scripts execute the transition queries, notification and changes under CM control as explained in Sections 22.2.3.5.1 and 22.2.3.5.2.

##### **22.2.3.5.1 "Change State Script" Description**

The Change State script is designed to provide configuration management support of software undergoing change. Software versions will have a state attribute assigned to facilitate the tracking of a version as it proceeds through its lifecycle stages. This script will give its user the capability to change the value of the state attribute of a file version as the version proceeds from one state to another. This script checks the entered state attribute value and allows only valid state values to be processed. It checks the user's identification and allows only designated user(s) to change the state attribute value. It checks to ensure that the entered state value is a valid transition from the file version's current state attribute's value, informs the user of unexpected transitions, and gives the user the option to proceed with the transition, anyway. It notifies appropriate personnel that the version is ready for system test, acceptance test, or production. It will also assign a state value of ready for supersession and superseded for those versions of files that are being or have been replaced. Valid state values, valid state transitions, personnel authorized to change state values, and personnel to be notified of state changes are stored in files.

##### **22.2.3.5.2 Promotion\_level Script Description**

The Promotion\_level script is designed to provide configuration management support of software undergoing change. Software versions will have a Promotion Level attribute assigned

to facilitate the tracking of a version as it proceeds through its lifecycle stages. This script will give its user the capability to change the value of the Promotion Level attribute of a file version as the version proceeds from one promotion level to another. It checks the entered Promotion Level attribute value and allows only valid promotion level values to be processed. Maintenance, system test, acceptance test, and Production are the valid promotion level values. This script also checks the user's identification and allows only designated user(s) to change the promotion level attribute value. It allows the designated user to promote the software version and it sets the initial state attribute value for the entered promotion level value. Valid promotion level values and personnel authorized to change these values are stored in files.

**Table 22.2-2. ECS Software Oriented Tables State Table**

<b>State</b>	<b>Authority to Change State</b>	<b>Person to be Notified</b>	<b>In Promotion Level</b>
In_Work	Developer		Maintenance
Ready for Inspection	Developer	Lead Engineer	Maintenance
Inspected	Lead Engineer		Maintenance
Ready for System Test	Lead Engineer	Tester	Maintenance
In Sys_Testing	Tester		System_Test
Sys_Tested	Tester		System_Test
Ready for Acceptance Test	Tester	Accept. Tester	System_Test
In_Accept_Testing	Accept. Tester		Accept_Test
Accept_Tested	Accept. Tester		Accept_Test
Ready for Release	Accept. Tester CM_Admin	CM_Admin	Accept_Test
Released	CM_Admin		Accept_Test
Ready for Production	CM_Admin	Sys_Admin	Accept_Test
In_Production	Sys_Admin		Production
Ready for Supersession	CM_Admin,		Production
Superseded	CM_Admin		

**Table 22.2-3. Valid State Transitions**

<b>Current State</b>	<b>New State</b>
In_Work	Ready for Inspection
Ready for Inspection	Inspected
Inspected	Ready for Sys_Test
Ready for Sys_Test	In_Sys_Testing
In_Sys_Testing	Sys_Tested
Sys_Tested	Ready for Accept_Test
Ready for Acceptance_Test	In_Acceptance_Test
In_Acceptance_Test	Acceptance_Tested
Accept_Tested	Ready for Release
Ready for Release	Released
Released	Ready for Production
Ready for Production	In_Production
In_Production	Ready for Superseding
Ready for Superseding	Superseded
Superseded	(No Transition)

**Table 22.2-4. Valid State Assignment Given Current Promotion Level**

Promotion Level	State
Maintenance	In_Work
Maintenance	Ready for Inspection
Maintenance	Inspected
Maintenance	Ready for System Test
Sys_Test	In_Sys_Testing
Sys_Test	Sys_Tested
Maintenance Sys_Test	Ready for Accept_Test
Accept_Test	In_Accept_Testing
Accept_Test	Accept_Tested
Accept_Test Sys_Test Maintenance	Ready for Release
Accept_Test As_Delivered	Released
As_Delivered Accept_Test Sys_Test Maintenance	Ready for Production
Production	In_Production
As_Delivered Production Accept_Test Sys_Test Maintenance	Ready for Supersession
Production	Superseded

**Table 22.2-5. Science Software Oriented State Table**

State	Authority to Change State	Person to be Notified	In Promotion Level
in work	SDPS/W		maintenance
ready for stand-alone test	SDPS/W	SDPS/W	maintenance
in stand-alone testing	SDPS/W		stand-alone test
stand-alone tested	SDPS/W		stand-alone test
ready for integrated test	SDPS/W	SSI&T	stand_alone test
in integrated testing	SSI&T		received by DAAC
integration tested	SSI&T		received by DAAC
ready for acceptance	SSI&T	CM_admin	received by DAAC
impounded for acceptance	CM_admin		delivered from SSI&T
ready for production	CM_admin		delivered from SSI&T
in commissioning	CM_admin		production
in full production	CM_admin		production
ready for superseding	CM_admin		production
superseded	CM_admin		production

**Table 22.2-6. Science Software Oriented Valid State Transitions**

Current State	New State
in work	ready for stand-alone test
ready for stand-alone test	in stand-alone testing
in stand-alone testing	stand-alone tested
stand-alone tested	ready for integrated test
ready for integrated test	in integrated testing
in integrated testing	integration tested
integration tested	ready for acceptance
ready for acceptance	impounded for acceptance
impounded for acceptance	ready for production
ready for production	in commissioning
in commissioning	in full production
in full production	ready for superseding
ready for superseding	superseded
superseded	(no transition)

**Table 22.2-7. Science Software Oriented Promotion Table**

Promotion Level	Authority to Promote	State
from SCF	CM_admin or SDPS/W	
maintenance	SDPS/W (checkout & checkin)	in work ready for stand-alone test in stand-alone testing ready for integrated test in integrated testing ready for acceptance ready for production
stand-alone test	SDPS/W	in stand-alone testing stand-alone tested ready for integrated test ready for acceptance ready for production
received by DAAC	SSI&T	in integrated testing integration tested ready for acceptance ready for production
delivered from SSI&T	CM_admin	impounded for acceptance ready for production
production	CM_admin	in commissioning in full production ready for supersession superseded

### 22.2.3.6 Installing the New Release

This procedure describes the steps that are executed to perform a SW upgrade on an ECS Host. The personnel involved are Sustaining Engineer (SE), Resource Manager (RM), Production Monitor (PM), and Host Operator (HO). The RM notifies the affected operators that there is an upgrade scheduled and the resources will be coming down for the installation activity. The RM then checks with the production monitor to begin unloading the target resources (if Autosys has already scheduled this event, it will happen automatically). The Production Monitor then checks the current load on target resources and informs the RM that the production jobs are complete. The RM then takes the initiative to shut down any processes that may still be running and begins shut-down procedures. Then by monitoring HP OpenView, the RM and SE are notified that the host has gone off-line. The SE uses the install script to install the upgrade, verifies the path and directory structures, and runs all diagnostic tests. The SE then informs the RM that the installation is complete. The RM then initiates the host start-up commands. HP OpenView then indicates that the host is back on line.

The assumptions underlying this procedure are as follows:

- (1) The upgrade has been previously scheduled and noted in the resource plan.

(2) The SW upgrade package was obtained from Tivoli Courier including any associated install scripts/makefiles.

(3) The detailed steps for installation have been provided in the VDD accompanying the SW package.

(4) The reconfiguration to minimize impact to existing operational resources has been defined.

The following table contains detailed steps of the on-site SW installation procedure.

**Table 22.2-8. Detailed Steps of SW Installation (1 of 2)**

Step	Operator Action	System
1	Resource Manager composes an information message to the affected operators stating that the affected resources will be taken down as scheduled.	
2		Displays information message on consoles.
3	RM asks production monitor to verify that the production has completed on the resource as planned.	
4	PM checks current load on target resources.	Provides display of current jobs running on requested production resources.
5	PM informs RM that production jobs are complete.	
6	RM now takes control and shuts down any processes still running on impacted host(s).	
7	RM begins shut down procedures to take host off-line.	The host receives the command and goes off line.
8		HP OpenView detects the change and changes the state to "off-line."
9		HP OpenView sends a status message to all of the affected operators indicating that the host has gone down and changes the corresponding icon to the down state.
10	RM receives a message from HP OpenView indicating that the desired host has gone off line. All operators monitoring the host receive a message from HP OpenView indicating that the designated host has gone off-line. Sustaining Engineer receives a message from HP OpenView indicating that the designated host has gone off-line.	
11	RM views the change in HP OpenView and notifies the Sustaining Engineer that the host is available for upgrade.	

**Table 22.2-8. Detailed Steps of SW Installation (2 of 2)**

Step	Operator Action	System
12	SE uses the developers' install script stored in SW Change Manager (Clearcase).	ClearCase executes the named install script which applies controlled file system changes to the specified host.
13	SE verifies that all of the paths and directories structures have been created and are correct.	Host lists its file system contents.
14	SE runs all of the diagnostic tests to verify that the new upgrade is operating as expected.	
15	SE informs the RM that the upgrade is completed	
16	RM acknowledges the message from the SE that the installation is completed.	
17	RM initiates the host start-up commands.	Host receives the commands and begins start-up.
18		Start-up completed.
19		HP OpenView detects the state change and changes the icon to the up status and sends a status message to all users indicating that the host is back on-line.
20	RM, Operators, and SE receives message from HP OpenView indicating that the host is back on-line.	

## 22.2.4 Obtaining Software Support

The Baseline Manager tool will contain the list of Responsible Engineers for the SW CIs. On-site Maintenance Engineers will consult with experts from the Sustaining Engineering Organization who perform system-level SW maintenance activities and REs who will lead troubleshooting activities of specific CIs. This point of contact information will be currently maintained in the databases. Prioritized Trouble Tickets will be used to coordinate this activity and provide emergency fixes and related Configuration Change Requests will sponsor permanent changes.

### 22.2.4.1 SW Problem Reporting

Anomalies, the apparent incorrect execution of an ECS CI, and inefficiencies, sub-optimal use of system resources, are documented using TTs. A TT may be submitted by users, operations, customer, analysis, maintenance and management staff. At the time of TT submittal, supporting information and data is captured by the ECS staff. SW problems will be reported via the Trouble Ticket system discussed in Section 8.

### 22.2.4.2 Troubleshooting

Troubleshooting will be conducted on an ad hoc basis. The site-level activity will be initiated by the Operations Supervisor assigning a Trouble Ticket to the Problem Investigator as discussed in section 8.2 Problem Resolution procedures. This process is supported by SEO Maintenance

Programmers, REs, and ECS Developers at the ECS Development Facility (EDF). The EDF will have the same SW and computer equipment variants available at the sites. They may be capable of duplicating anomalies experienced in the on-site's system to derive effective resolutions and/ or work-arounds as required until a permanent resolution is implemented.

At the TT telecon, the TT is prioritized and assigned by the Failure Review Board to an organization for work-off. A Responsible Engineer (RE) is assigned to work-off the TT. Using the captured data, a technical investigation is performed to attempt to isolate the source of the reported anomaly or inefficiency.

If the problem is caused by a non-ECS element (e.g., an interface problem with an external system, poor resource usage by a science algorithm, poor performance by a non-ECS service, etc.), the TT and supporting material is provided to the maintainer of that element. An ECS CCR may also be proposed to protect ECS from potential threats of future problems identical or similar to that documented in the TT. CCRs are discussed in detail at section 9 of this document.

If the TT is properly written against an ECS element, one or more of the following actions are taken:

- Describe the source of the problem and the recommended design/implementation change. Procedure modifications may also be appropriate.
- Modify procedures. Describe the source of the problem and modify procedures to eliminate or reduce the number of occurrences of the documented problem. Modifications may be temporary (i.e., work-arounds) or permanent. If the change is permanent, the TT can be closed and/or a User Recommendations Data Base (URDB) input generated.
- Track. The technical investigation focuses on collection of additional data from new occurrences to support additional analyses into the root of the problem and/or the frequency of occurrence. As a result of tracking, further technical investigations may result in any of the other actions.
- Re-prioritize. Describe the results of the technical investigation and recommend a priority change at the TT Telecon. A lowered priority may result in the TT going into backlog status or being closed. A higher priority may result in additional resources being applied to the technical investigation.
- Close with URDB input. The technical investigation may discover that what is being reported as a problem is actually the proper implementation of the feature based on the requirements baseline. A URDB input documents a recommended requirements change.
- Close TT into existing TT or CCR. If the TT documents a known problem for which no solution has been identified, the new TT can be closed into the existing TT. Supporting material from the new TT is added to that previously collected. The TT may also be closed into a CCR that has been previously written but not yet installed into the operational baseline.

The originator of the TT is kept informed throughout the process via minutes from the TT telecon and voice/ e-mail status reports from the RE.

### **22.2.4.3 Corrective Action Reporting**

Trouble Tickets will be used to document SW problems as noted in Section 22.2.4.2. The results are tallied against SW Configuration Items to determine critical maintenance concerns related to frequency of occurrence, criticality level, and the volume of problems experienced. The maintainability analysis will guide critical changes, volume and type of support components to be utilized, and focus of further ECS release development.

### **22.2.5 Science Software**

The maintenance of science software and data items provided by the Science Computing Facilities (SCFs) is not the responsibility of the ECS on-site maintenance engineers. Problem resolutions and changes to science software sponsored by the SCFs shall be introduced under the auspices of local DAAC configuration management activities and the Earth Science Data and Information System (ESDIS) (GSFC Code 505) CCB in the same manner as new releases to baselined science software. On-site changes or updates shall be integrated and tested by the Science Software Team. Ongoing CM of ECS integrated science software will be accomplished by the same tool set used for ECS developed software as explained in the Developed SW Maintenance Plan at Section 3.3 *Standardization of Support Procedures* under local DAAC control.

## 23. Property Management

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This section describes procedures for the receipt, control, and accountability of ECS property at ECS sites. The "Property Management Plan" 602-CD-001-002 is the base document that addresses the process and policies regarding how ECS property is to be managed. The site Local Maintenance Coordinator (LMC) at each site is the site's property administrator. LMCs should be thoroughly familiar with and adhere to the contents and policies contained within that document.

The LMCs support the activities of receiving, inspection, storage, issue, inventory recording, accounting, and reporting of ECS property at ECS sites. Generally, LMCs should follow the processes, procedures and policies specified in the Property Management Plan. Locally developed procedures should be forwarded to and reviewed by the ECS ILS Office for consistency with this plan.

### 23.1 Receipt of Equipment and Software from Vendor

Some equipment, software, consumables, and media will be shipped direct from vendors to the sites. In such cases, the ILS PA will fax a copy of the Purchase Order to the LMC to serve as a due-in notice. Upon receipt of the equipment, the LMC will perform a receiving inspection to verify correctness of delivery, quantity received and to determine if items were damaged during shipment. The LMC will utilize the following tables as guidance for Receipt of Incoming Items.

- Table 23.1-1 for the Receipt of Equipment
- Table 23.1-2 for the Inventory Worksheet
- Table 23.1-3 COTS Non-Conforming Product Report Checklist
- Table 23.1-4 Receiving Process Checklist

The worksheet for documenting inventory as well as the checklists can be located on the Web at <http://dmsserver.gsfc.nasa.gov/forms/formindex.html> under Project forms. Inventory Worksheet form number is Mo05ja99.doc. The Property Checklists form number Mo06ja99.doc, which includes the Loading Dock Checklist, System Verification Checklist and Receiving Process Checklist. The ILS Property Administration (PA) has incorporated these two forms together as one document to reduce paperwork. When all checklists are signed and verified, the LMC will fax or email all forms to the ILS Property Administration and ILS Property Administration will update the Inventory Database. When a product is received that does not conform to the purchase order the Non-Conforming Product Report (NCR) form located at the same URL with the following form number Mo08ja99.doc can be accessed for use. **Work flow process charts A, A-1, and A-2 illustrate Receipt of Hardware/Software, Inventory Worksheet and Non-Conforming Product Reporting and can be located at the end of this chapter.**

**Table 23.1-1. Procedure for the Receipt of Property**

<b>Step</b>	<b>Action</b>
1.	LMC completes the Loading Dock checklist document with the following information: Printed name of receiving individual Signature of receiving individual Date of receipt Name of the carrier Shippers bill of lading or tracking number Customer reference number (when appropriate) Number of boxes received Condition of boxes with a notation of Satisfactory or Damaged
2	LMC Verifies damage, shortage, overage or other discrepancies and annotates these findings on both the carrier's and site's copy. An NCR will be completed as listed in Table 23.1-4
2a	If damages are noted obtain a signature of the carrier's representative on the shipping carrier's document and notify the ILS PA for further information
3	Begin the process of moving equipment into a controlled storage area and completing the inventory worksheet as described Table 23.1-2

**Table 23.1-2. Procedure for Completion of the Inventory Worksheet**

<b>Step</b>	<b>Action</b>
1.	LMC removes the equipment from the loading dock to controlled storage area.
2.	Verifies the items received against purchase orders and vendor's packing list. Inspects visual condition of material and documents information on Inventory Worksheet,
3.	Documents the serial, model numbers and other appropriate markings on the Inventory Worksheet. Performs final visual inspection of product to ensure no damage or non conforming items have been received..
	Places silver EIN tags on equipment per the instructions listed in section 23.2
5	Assembles equipment for burn-in to be performed for 72 hours and documents the burn-in process on the System Verification Checklist.
6.	If required, completes the COTS NCR using the procedure in Table 23.1-3.

**Table 23.1-3. Procedure for Completion of the Non Conforming Product Report**

<b>Step</b>	<b>Action</b>
1	LMC verifies shipment discrepancies (include shortages, overages, and incorrect items/quantities/models.
2.	Completes COTS NCR per instructions on the back of the form
3.	Sends the completed COTS NCR to the ILS PA via fax or EMAIL
4.	ILS PA sends the NCR form to the appropriate group for vendor notification and resolution.
5.	The resolving group will communicate periodic status from the vendor to the ILS PA, who will notify the LMC.
6.	The ILS PA will receive the completed NCR from the appropriate group and files in the Property Purchase Order files. The ILS PA will send a copy of the completed NCR via fax or EMAIL to the LMC for their records.

**Table 23.1-4. Receiving Process Checklist**

<b>Step</b>	<b>Action</b>
1.	Verify that Loading Dock Checklist has been completed with all the appropriate information
2.	Annotate Purchase Order number or Returned Material Authorization (RMA) on the Inventory Worksheet.
3.	Verify that COTS NCR has been completed and processed, if required as in Table 23.1-3.
4.	If the material is partial receipt, verify that it is segregated, labeled, marked and in a controlled storage area
5.	If the order has a COTS NCR, verify that it is segregated, labeled and documented in a controlled storage area.
6.	Verify the Inventory Worksheet, System Verification, and Receiving Process Checklist have been completed and documented. Fax or Email to the ILS PA

## **23.2 Receipt of Equipment and Software from the ILS Property Administrator**

The LMC will also receive equipment from the ILS PA. Table 23.2-1 defines the process of receiving equipment at the DAACS from the ILS PA and actions required. In addition the ILS PA will be the lead for the COTS NCR. The information listed in Table 23.1-3 explains the process to follow when completing a COTS NCR.

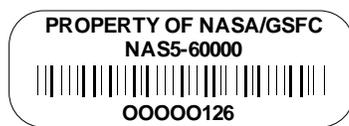
**Table 23.2-1. LMC Actions for Property Received from the ILS Property Administrator**

Step	Action
1.	LMC receives shipment with Installation Receipt (IR) report from the ILS PA.
2.	LMC inspects and verifies for shipping damage, completeness using the IR report.
3.	Notifies the ILS PA immediately of any discrepancies. If discrepancies exist, annotate the IR report accordingly.
4.	Sign for the property where indicated and redline location and site specific changes on the top right header information.
5.	LMC retains a copy for files and mails the original back to ILS PA
6.	The ILS PA enters the redline changes into the ILM Property Database.
7.	The original signed redlined IR report and a copy of the Installation Report will be filed in the ECS equipment folder.
8.	The site copies of the IR report and installation report will be filed in the site equipment folders
9.	The LMC will coordinate installation of the equipment in accordance with approved CCR and DAAC procedures.

### 23.3 Equipment Tagging

ECS equipment (e.g., contractor-acquired and GFP) that is separately identifiable and meets the criteria for controlled equipment as described in the Property Management Plan 194-602-OP1-001, will be tagged with ECS property tags. Figure 23.2-1 illustrates ECS property tags. The ILS PA prior to shipment will tag ECS equipment reserved at the EDF for staging and subsequent shipment to the sites. Tags will be placed on the equipment so that they are visible and easily accessible by bar-code scanners. Vendor-loaned and RSC capital equipment will not be tagged with ECS property tags.

#### Centrally Reportable Equipment Tag



↑  
Equipment Identification Number (EIN)

#### Non-reportable Property Tag



**Figure 23.2-1. ECS Property Tags (actual size)**

Components of major equipment that are not separately identifiable or stocked for use, such as spares/repair parts will not be assigned an EIN. Items not given an EIN sticker will be

controlled as inventory items and recorded by manufacturer, description, model/version, serial number (if applicable), location, quantity and with the parent EIN.

Property tags of loaned GFP equipment containing a NASA equipment control number (ECN) will not be removed by the LMC. At the time of receipt of such property, the ILS PA will affix an ECS property tag with EIN next to the government tag. The NASA ECN will be recorded in the property record and cross-referenced to the EIN.

Prior to disposing of ECS equipment, to include transfer to the Government, ECS property tags will be removed. Removed ECS property tags will be retained with the property turn-in document. Turn-in documents will be forwarded to the ILS PA for retention in the property records.

## 23.4 Property Records and Reporting

The ECS Project will use the Inventory Logistics and Maintenance (ILM) system to support the property management, control and reporting functions for contractor-acquired and GFP equipment. Property records are created and maintained in this system by the ILS PA. LMCs will be able to do queries and prepare reports using the system. Note: Instructions for the use of ILM are in Section 27 of this document.

Property records will contain a line for each item having an EIN (e.g., workstation monitor) and each of its major components (e.g., network interface cards, RAM chips, graphics card). Refer to the IR Report provided at the time of site installation. **It is the responsibility of the LMC to notify the ILS PA of inventory, configuration, and location changes so that site property records will be maintained current.** See Paragraph 23.5 for specific instructions.

### 23.4.1 Maintaining Property Records

LMCs will document inventory and configuration changes in local property records within one business day of the change and appropriately notify the ILS PA.

Support documentation for posting changes to property records include the following:

- **Installation Receipt Report** -- This report is provided by the installation team at the time equipment is installed and is used to record receipts and changes of equipment at the site. It can be used to update site property records with installed location, date, and name of the person accepting receipts. This report is signed by the LMC to acknowledge receipt of equipment at the site.
- **Maintenance Work Orders (MWO)** -- Prepared by the site LMC to report equipment changes resulting from maintenance or relocation actions (e.g., serial/model changes, component replacements, and relocation/reconfiguration at the site). MWOs are used by the ILS PA or the ILS Maintenance Controller to update the ILM property records.

### 23.4.2 Reporting Loss, Theft, Damage or Destruction

If ECS or GFP property at the site is lost or stolen, the LMC will notify the security as soon as the theft is discovered and the ILS PA within one business day. The initial written report will contain all information related to what was lost/stolen, when, where, how, and the circumstances

regarding the loss/theft. The final report, due 30 days later, will contain all information required by the ECS Property Management Plan and will be signed by the DAAC Operations Manager. If a report was prepared by local security personnel/police, a copy of the report should be attached to the report.

If equipment is damaged or destroyed through circumstances that indicate inappropriate use, negligence, or improper care, the LMC will likewise notify the ILS PA of the specifics of the damage/destruction and its circumstances via Internet as soon as known.

The ILS PA will review such incidents and report, as required, to the ECS Contracts Manager, who will notify the Government Property Administrator (e.g., DCMC ) within one business day.

## **23.5 Equipment Relocation**

This section provides instructions for equipment relocation within a DAAC (intra-site relocation); between ECS sites, and between ECS sites and non-ECS sites (inter-site relocation); to a vendor (off-site relocation); and transfer to outside the contract (external transfer). ). **Work flow process charts B, B-1, and B-2 illustrate Equipment Relocation and can be located at the end of this chapter.**

### **23.5.1 Intra-site Relocation**

Requirements for equipment reallocations within the facility or between facilities at the same site will be processed through the LMC to maintain control and accountability of equipment inventories. A Maintenance Work Order (MWO) should be used to document and forward the relocation request to the LMC. The LMC reviews the request and schedules the relocation when approved by the local management or configuration control board. When completed, the LMC will report the location change in the MWO and forward the MWO to the ILS PA by entering status code "A".

### **23.5.2 Inter-site Relocation**

Inter-site relocation requests require a CCR approved by the ECS CCB. Such requests will identify by EIN and equipment description what is to be moved, where and when it is to be moved, and the reason for the relocation. The losing site LMC will coordinate the relocation resources and schedule with the gaining site and the ILS PA which will document the action in and MWO. Once completed, the gaining site's LMC will report completion of the relocation to the ILS PA by recording status code "A" in the MWO. The ILS PA will then update the property record with the new location and date of the action. Any loss or damage to the equipment will be reported using the procedure described in Section 23.3.3 when it occurs or is first discovered. Configuration management authorization is required prior to relocating equipment or software between DAACs.

### **23.5.3 External Transfers**

LMCs will not transfer any ESC property to persons or organizations outside of the ECS contract. The ECS Contracting Officer is the only approving authority for such transfers. When

the ILS PA receives written authorization from the ECS Contracting Officer, transfers of ECS property to the Government or to other contracts will be accomplished. The ILS PA will provide written instructions and the necessary documentation to the LMC authorizing the property transfer.

## **23.6 Inventories and Audits**

LMCs will complete a 100 percent physical inventory of controlled ECS property and GFP at the site at least annually and not later than July 31. Notification of the scheduled date of the inventory will be provided to the ILS PA 45 days prior to the inventory start date. ECS personnel responsible for maintaining property records will provide technical assistance but will not be part of any inventory count teams. Inventories will be designed to achieve the following objectives:

- Verify that accountable equipment is still on hand
- Confirm or determine current locations and custodial responsibility for equipment and material
- Identify unrecorded equipment which qualifies for control
- Locate or identify missing equipment.
- Identify unused or under utilized equipment and equipment or material in need of repair or rehabilitation.

The LMC will, at the time of completion of the annual inventory, forward a copy of the Inventory Reconciliation Report to the ILS PA. The Inventory Reconciliation Report will be signed by the site's ECS Manager attesting that a 100 percent inventory was conducted and that all equipment is accounted for except for those indicated as not on hand. All discrepancies will be explained.

## **23.7 Storage**

Access to equipment and software in storage will be limited to authorized personnel and controlled by the LMC. LMCs will ensure that storage areas are kept in a clean, orderly manner. Material will be stored on shelves, in bins or drawers as appropriate, and its storage location entered into the site property record. Special storage areas or controls will be provided for items subject to corrosion, humidity, and temperature. LMC should ensure that Electrostatic Discharge (ESD) procedures are used for all items requiring ESD protection. See paragraph 23.9 for specific ESD instructions. Such items will be inspected semi-annually by the LMC. Serviceable property does not require any special color tag.

### **23.7.1 Segregation Requirements**

Contractor-owned and vendor-loaned property will be segregated from ECS Government-owned property during storage. Unserviceable equipment will also be segregated from serviceable equipment and will be tagged. Unserviceable/reparable equipment will have a yellow tag affixed to it; unserviceable/non-reparable equipment will have a red tag affixed. Unserviceable

equipment tags will indicate reason item is unserviceable, date it became unserviceable, parent EIN it came from, and signature of person declaring the item unserviceable.

### **23.7.2 Stock Rotation**

Material designated as “stock,” such as computer tapes, cleaning tapes, CDs, labels, etc., should be used on a first-in, first-out basis. LMCs will notify the ILS PA of its consumable and media requirements at least 90 days in advance of the need date and will not have in stock greater than a 6-month supply. LMCs will consider space available for storing such material prior to placing its order with the ILS PA. Consumable items are recorded as "C" in the ‘type item’ status field of the ILM system.

### **23.7.3 Physical Security**

ECS property will be stored in secured areas where access will be limited to authorized personnel and controlled by the LMC.

## **23.8 Packing and Shipping**

Prior to shipping centrally reportable equipment to the EDF or other ECS sites, the LMC will notify via Email the receiving LMC of the site’s intent to ship. This will include the expected shipment date, carrier, shipping document number, estimated weight and cube, number of pieces, shipper and ship-to-address. Prior to shipment, a pre-shipment inspection will be performed to verify the following:

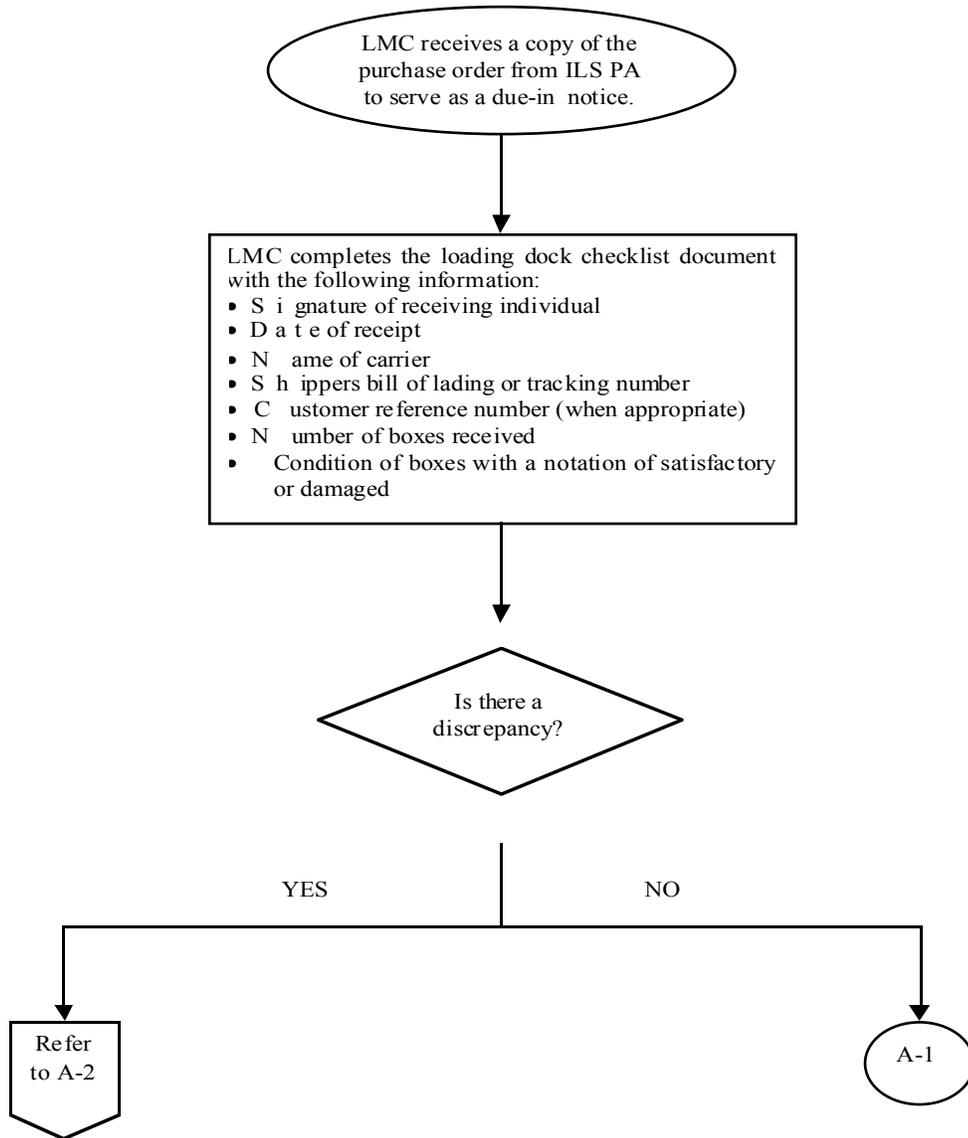
- Correct identification of equipment on packing lists and shipping documents including configurations, serial numbers, number of containers, and ship-to address.
- Adherence to packing, packaging and marking standards.
- Inclusion of appropriately prepared documents within shipping containers.
- LMC will notify the ILS PA via Email or phone when the item shipped has been received.

ECS property being shipped from vendors and the EDF will be shipped to the DAAC facility to the attention of the ILS Local Maintenance Coordinator. Local policy at some sites may require delivery to a site central receiving point. In such cases, written procedures will be developed between the LMC and the site’s central receiving office regarding notification of receipts, documentation required, and provisions for local delivery to the DAAC facility. The delivery of ECS equipment to site central receiving points versus direct delivery to the DAAC facility will be determined based on agreements and procedures established between the host facility and the DAAC.

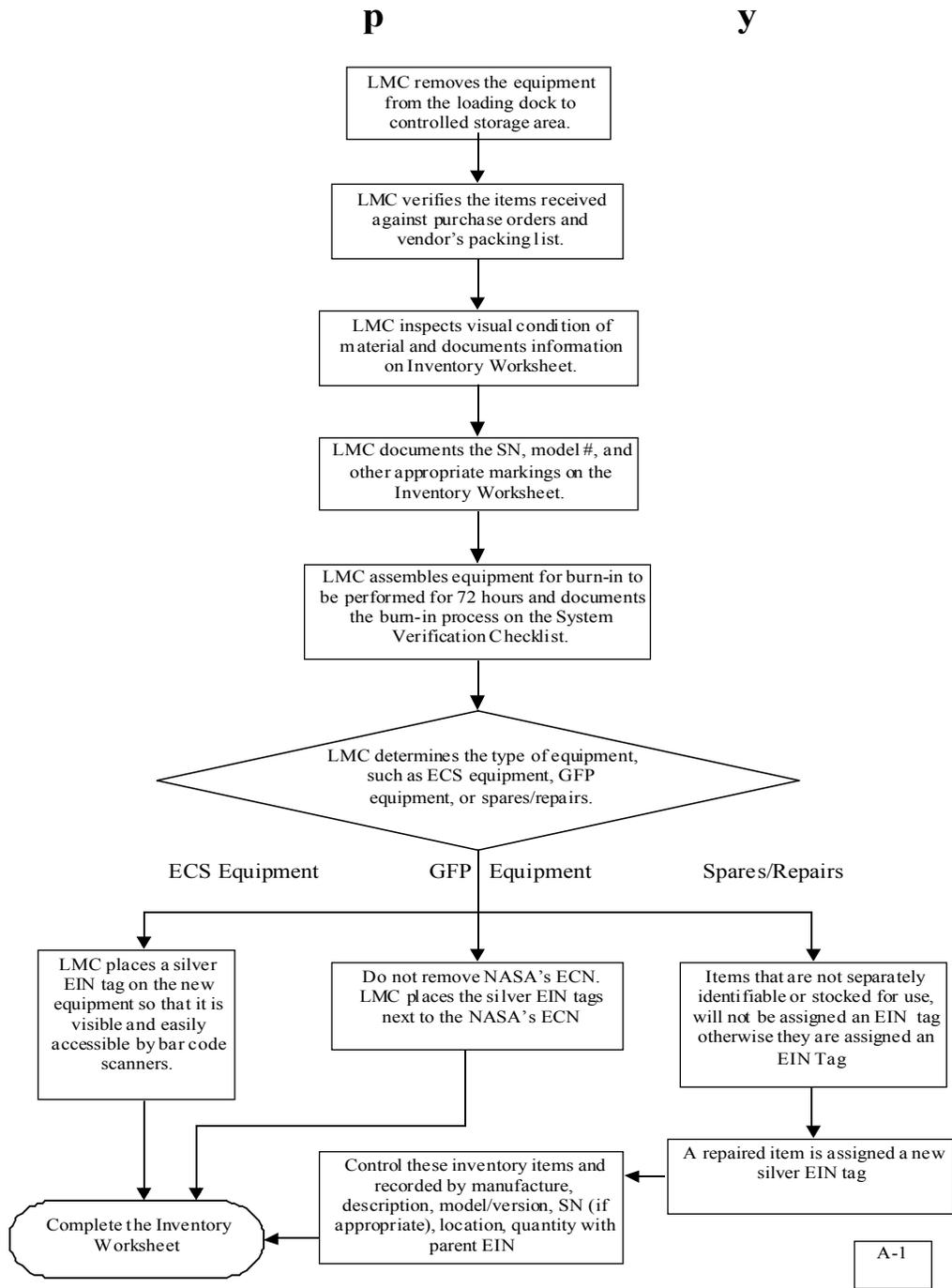
## **23.9 Electrostatic Discharge (ESD) Program**

An Awareness program on Electrostatic Discharge (ESD) and operations and maintenance practices will be followed to eliminate ESD hazards to HW, SW, or people. Procedures for the program will be developed using DOD-HDK-263 and DOD-STD-1686 as guides. Included in the program will be policies and procedures for prevention and safe dissipation of static electricity: Workplace common grounding requirements; and parts handling and protection when

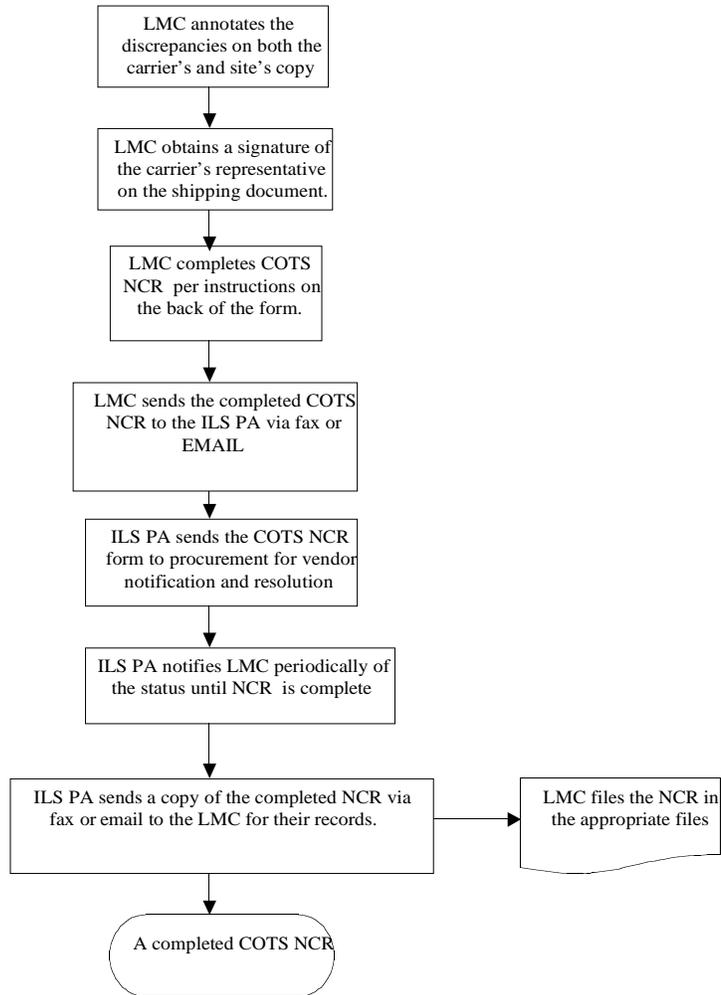
in storage, outside the manufacturer's protective packaging, and being readied for installation or removal and packaging for delivery. ESD hazard awareness and prevention will be an appropriate part of the training and certification process of ECS operations and maintenance personnel. All ESD hazard awareness and prevention requirements will be passed through as requirements to all operations or maintenance subcontractors.



**Figure 23.9-1. Receipt of Equipment and Software from Vendor**



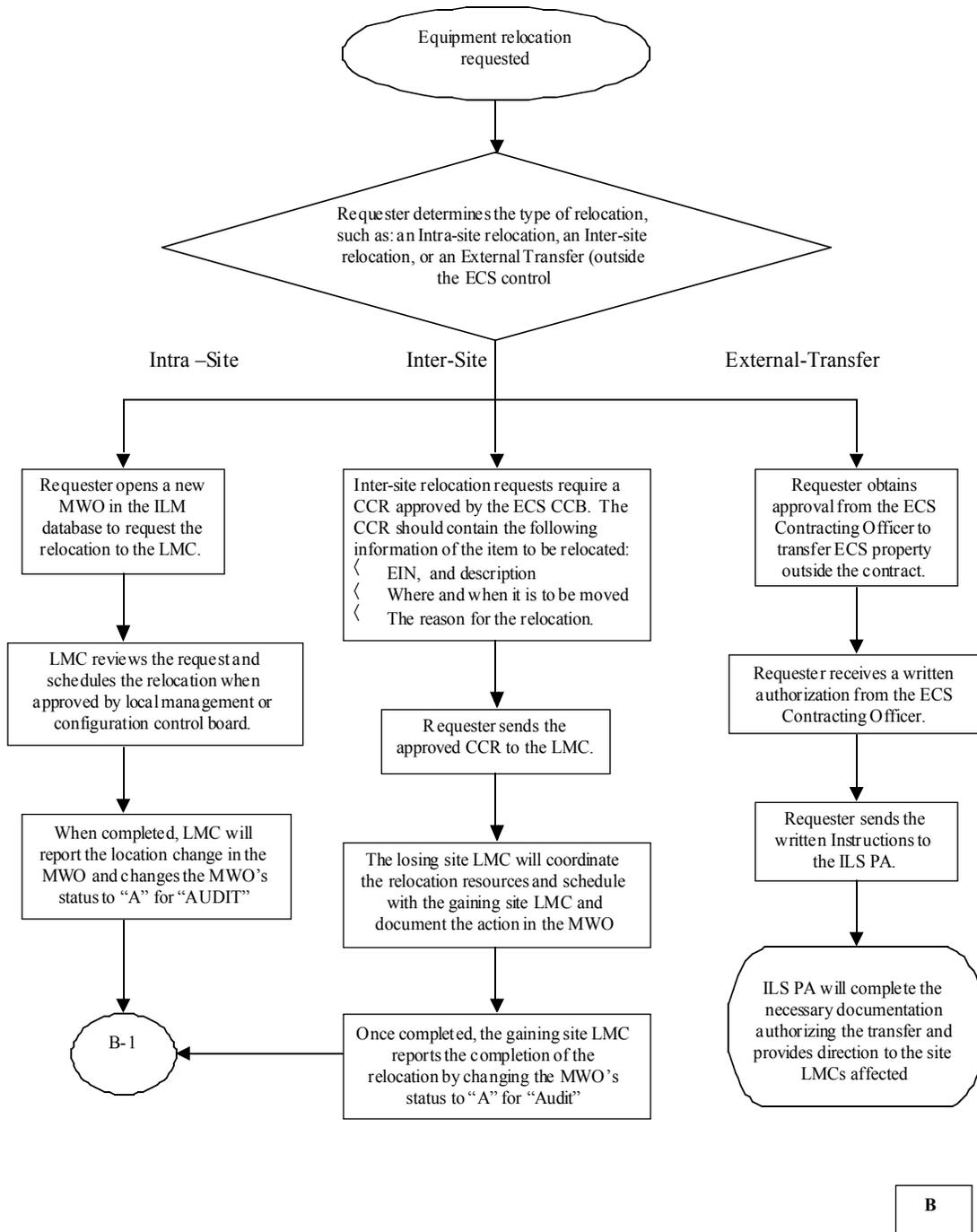
**Figure 23.9-2. Procedure for Completion of the Inventory Worksheet**



A-2

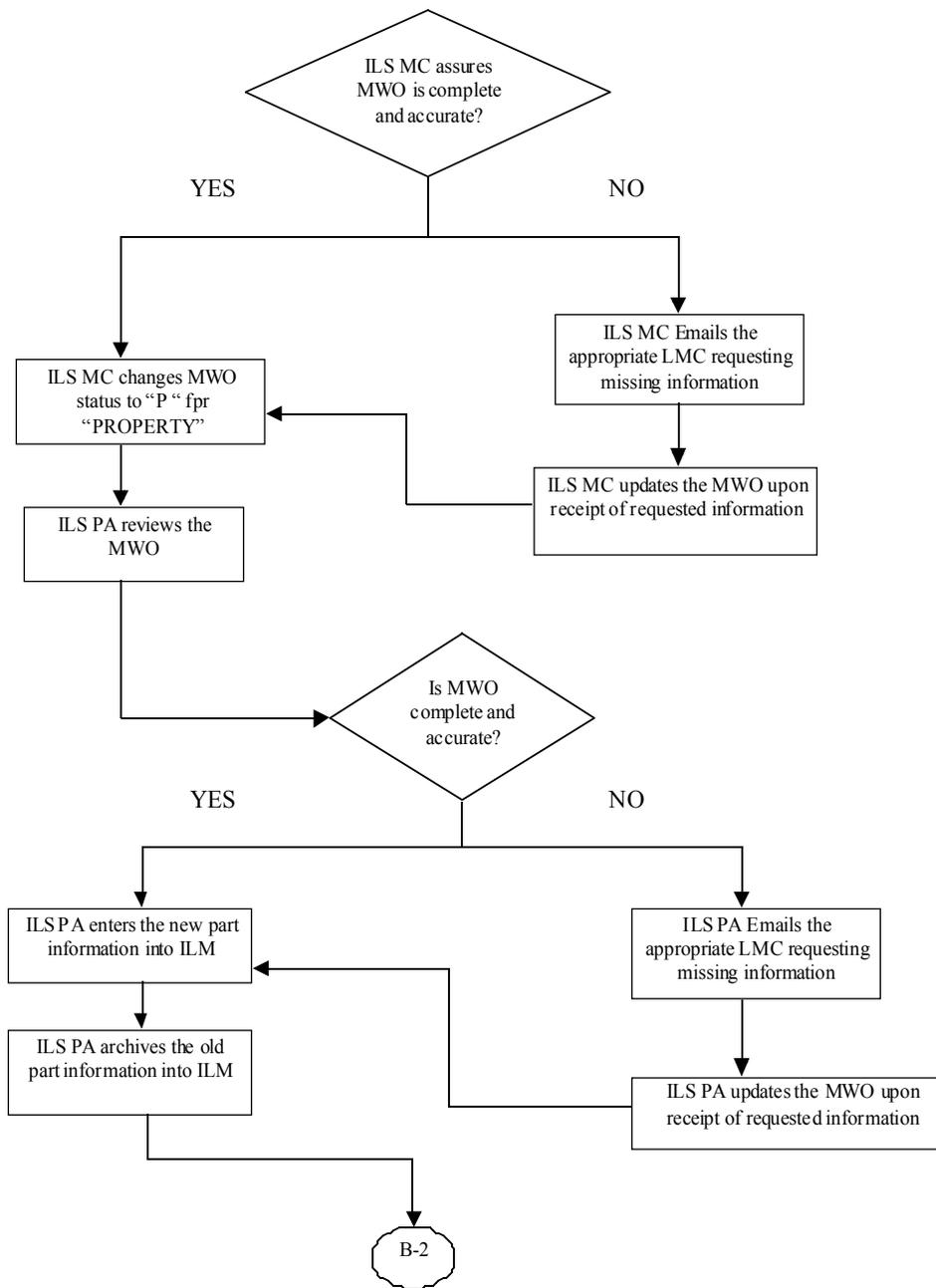
**Figure 23.9-3. Procedure for Completion of the Non Conforming Product Report (NCR)**

## Equipment Relocation (1 of 3)



**Figure 23.9-4. Equipment Relocation (1 of 3)**

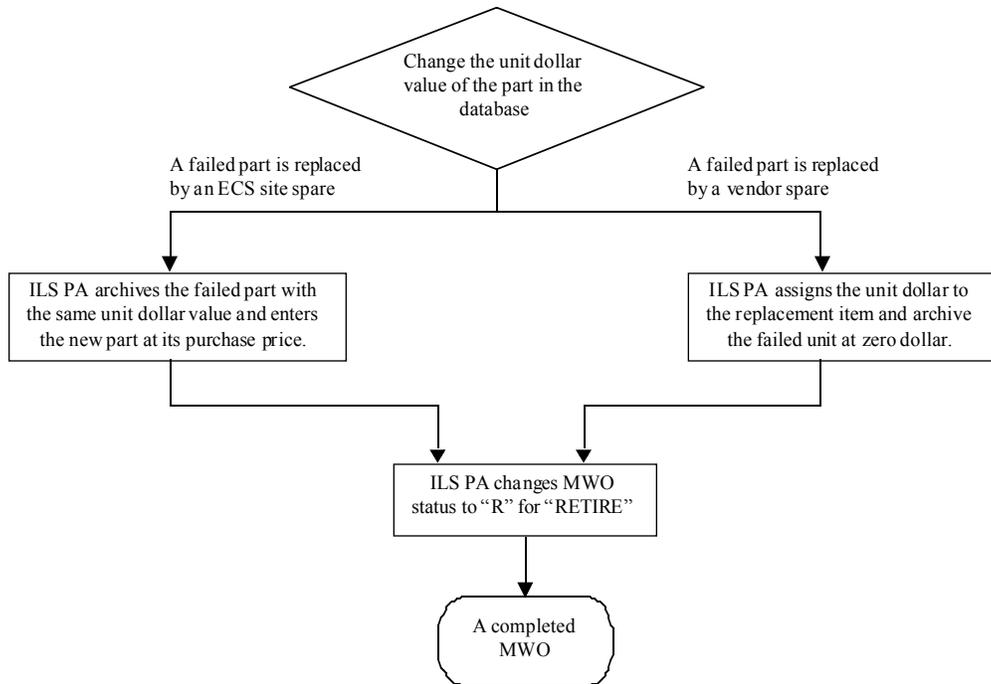
## Equipment Relocation (2 of 3)



B-1

**Figure 23.9-5. Equipment Relocation (2 of 3)**

## Equipment Relocation (3 of 3)



B-2

**Figure 23.9-6. Equipment Relocation (3 of 3)**

## 24. Installation Planning

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The ECS Facilities Plans (DID 302-CD-003-001 to DID 302-CD-008-001) and the Installation Plans developed for each ECS release are the products of the facility and installation planning process. DAAC Facilities Plans are distributed 30 days after each Release Critical Design Review (CDR). These plans identify space, power, and cooling requirements based on design information available at CDR. The Installation Plans are distributed two months prior to installation of equipment at each ECS Release. As such, the Facilities Plan identifies facility preparation requirements and general installation planning that is based on final design information. The Installation Plans provide the detailed planning required by installation teams and the sites to make final preparation for installing Release equipment. Both documents are provided in draft to the DAACs for review and comment prior to publication.

### 24.1 Responsibilities

Installation planning and coordination is the responsibility of the ILS Installation Coordinator, who is part of the Integrated Logistics Support (ILS) Office within M&O. Using information obtained during site surveys, the Installation Coordinator prepares the Facility Plans and the Installation Plans and coordinates actions needed to prepare for and conduct the installations. DAAC M&O personnel support the Installation Coordinator by providing information to complete the Site Survey Questionnaire; reviewing the Facility Plan and the Installation Plan. They also ensure that site preparations/coordination are completed on schedule; facilitating receipt and installation of the hardware; and accepting installation of the hardware and software by signing the Installation Receipt Report. **Work flow process charts A, A-1, and A-2 illustrate Installation Planning and can be located at the end of this chapter.**

### 24.2 Process Description

DAAC site surveys have been previously conducted to obtain DAAC-specific information needed to begin the installation planning process. This information was documented in a Survey Questionnaire prepared for each DAAC and is used in the preparation of the Facility Plans and the Installation Plans. This information, plus design and equipment specifications, is used to prepare the Facilities Plans, which project facility requirements and provide a preliminary plan for the placement of systems within the DAACs. DAACs review this information and provide requested changes, which are considered in the preparation of the Installation Plans.

Two months prior to the installation of hardware, a detailed Installation Plan is produced to identify the planned placement of hardware in the facility and how the hardware will be configured and networked, and to identify site preparations necessary to support the installation. Installation teams use the Installation Plan to install the systems and networks. After the equipment is installed and tested, the installation team leader obtains the DAAC Manager's signature on the Installation Receipt Reports, which details the locations and equipment that have been installed and networked. Within three weeks following the installation, the Installations Coordinator will update the facility diagrams and network diagram to reflect the as-installed configuration at the site. These diagrams

are submitted to the ECS CCB and, when approved, becomes part of the operations baseline for the site and are available for viewing on the web. The baselined diagrams are provided to the site in the “As-Built” document provided to the DAAC shortly after the installation of hardware has been completed. It is the responsibility of the LMC to notify the Installation Coordinator as changes to the baseline documentation occur.

**Table 24.1-1. Installation Planning Activity Outline**

<b>Step</b>	<b>Responsible Person</b>	<b>ACTION</b>
1	Installation Coordinator	Receive a copy of installation survey
2	Installation Coordinator	Contact vendors, define and arrange load to be delivered to installation site
3	Installation Coordinator	Briefing with DAAC SE and coordinate schedule
4	Installation Team	Install hardware based on Installation schedule
5.	Installation Team	Test equipment
6	Installation Coordinator	Update Installation plan with revisions
7	Installation Team	Test connectivity of all devices by Pinging
8	Installation Coordinator	Update information to the plan and create a As-Built document consisting of SCSI Cable Management Schemme, Floor Plan, VCATS Hardware Report, LAN Cable Management Scheme, Network diagram and the Hardware Diagram
9	Installation Coordinator	Sends the As-Built document to DAAC Liaison while creating a CCR for the CCB
10	DAAC	The DAAC Liaison should provide any changes, deletions or addition to the As-Built document as quickly as possible.
11	Installation Coordinator	will revise and submit the CCR to the CCB
12	Installation Coordinator	Incorporate changes from CCB
13	Installation Coordinator	Send publication to Web Document Control Group

### **24.3 Maintenance of Facility and Hardware Diagrams**

Facility and hardware diagrams reflect the as-installed configuration. The baseline version of these diagrams is maintained by the ILS Installations Coordinator. As changes to these diagrams occur (e.g., relocation of equipment within the site, additions/deletions to the LAN), the LMC will inform the ILS Installations Coordinator by redlining the diagrams. The Installations Coordinator will update the Computer Aided Drawing (CAD) system to reflect the change(s) and provide an updated facility drawing to the site’s LMC. The Installation Coordinator will create a CCR and present the changed documents to the CCB for approval to change the baselined document.

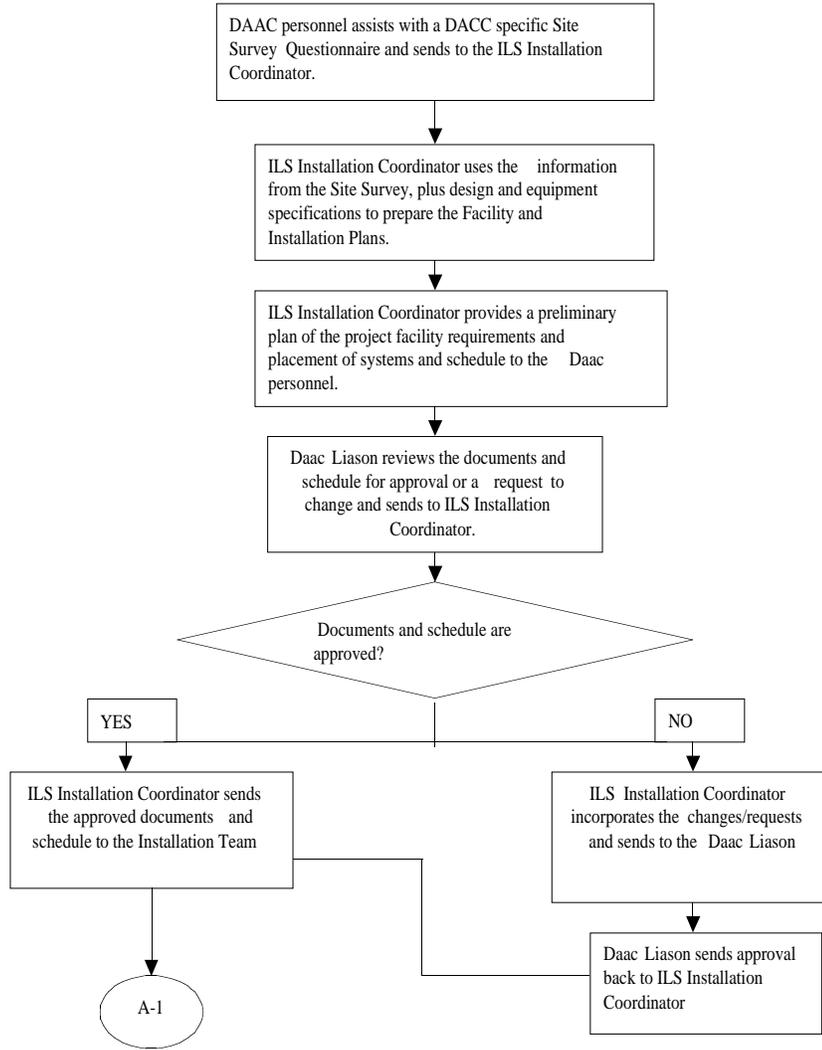
## **24.4 Maintenance of LAN Cable Management Scheme**

Within three weeks of the completed hardware installation, a LAN Cable Management Scheme is supplied to the DAAC LMC by the ILS Installations Coordinator. This matrix will identify the cable number, type, length, decibel loss rating, and location of cables installed; and will identify the IP addresses of the equipment connected by the cables. The LMC will update this matrix as LAN changes occur and send the changes to the Installations Coordinator. The Installation Coordinator will create a CCR and present the changed documents to the CCB for approval to change the baselined documents.

## **24.5 Maintenance of SCSI Cable Management Scheme**

Within three weeks of the completed hardware installation, a SCSI Cable Management Scheme is supplied to the DAAC LMC by the ECS Installations Coordinator. This matrix will identify the cable number, length, location of cables installed; and will identify the equipment connected to the cables. The LMC will update this matrix as LAN changes occur and send the changes to the Installations Coordinator. The Installation Coordinator will create a CCR and present the changed documents to the CCB for approval to change the baselined documents.

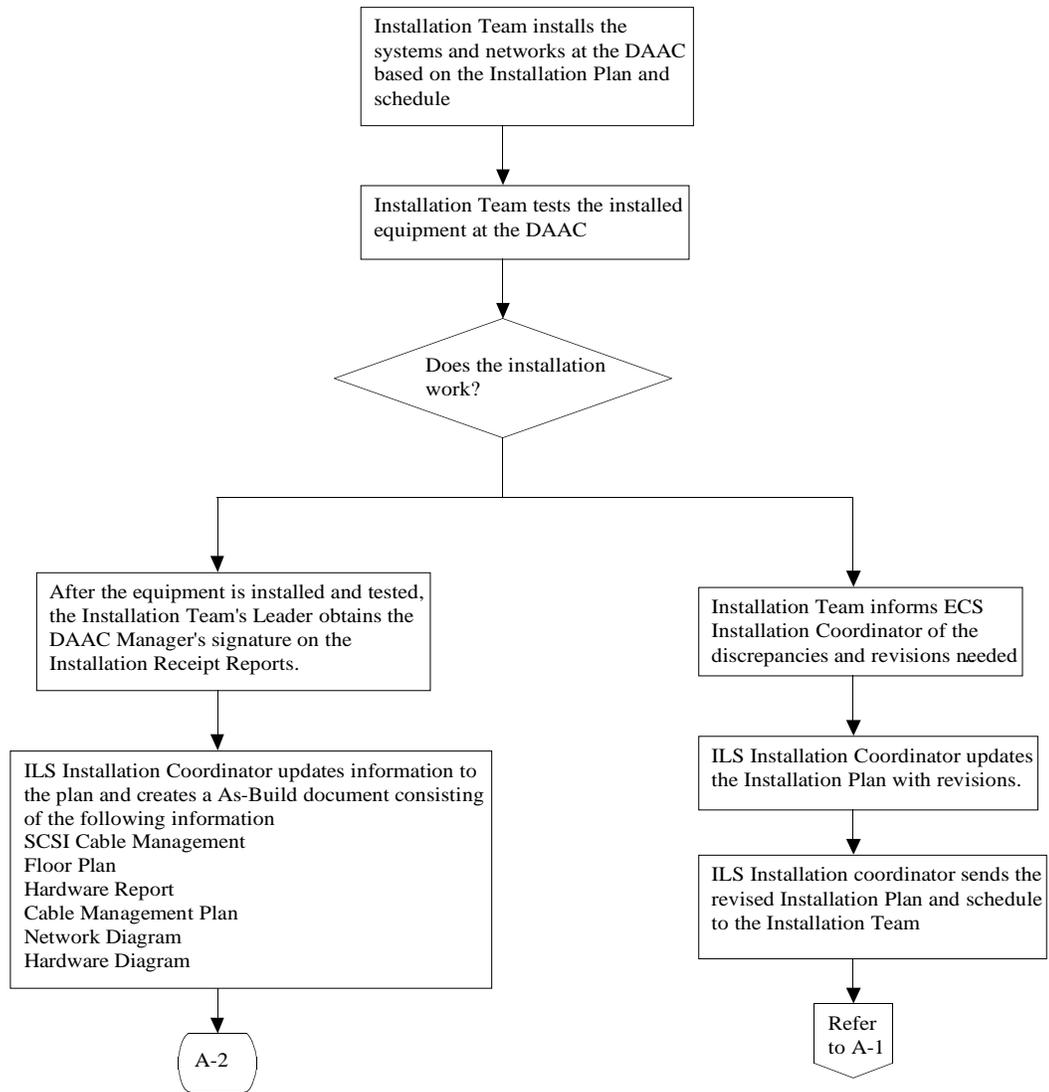
## Installation Process (1 of 3)



A

Figure 24.5-1. Installation Process (1 of 3)

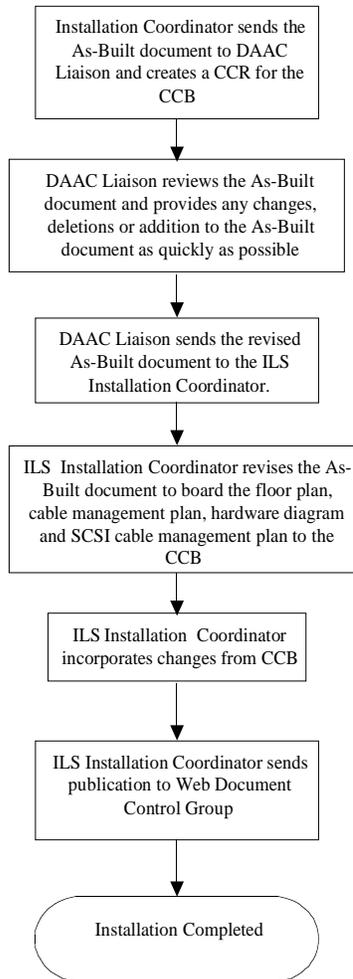
## Installation Process (2 of 3)



A-1

Figure 24.5-2. Installation Process (2 of 3)

## Installation Process (3 of 3)Ä



A-2

**Figure 24.5-3. Installation Process (3 of 3)**

## 25. COTS Training

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The procedures to request COTS training have been developed based on these sources: DID 622 ECS Training Plan DID 611-CD-001-005 ECS Mission Operations Procedure, M&O Certification Plan 626-CD-001-005, Section 3, 4 of the ECS M&O Position Description DID 607-CD-001-002. The ECS System Support Office (SSO) Operations Trainer arranges for COTS training by working with the COTS Training Coordinator, the ILS Manager, as well as the potential students.

The Activity Checklist in Table 25.1-1 outlines the role of the COTS Training Coordinator and the section number where details for performing the tasks can be found.

**Table 25.1-1. COTS Training - Activity Checklist**

Task	Section
DAAC's SMC, SSO, ILS, and ECS Development submit requests for COTS Training	25.1
Forward request to ILS Manager	25.2
Arrange for equipment and classroom space	25.2
Ensure that initial registration will be filled or arrange for cancellation without penalty	25.3
Maintain COTS training records	25.4
Monitor DAAC COTS training budget	25.5

### 25.1 Requesting COTS Training

The COTS Training Coordinator must request training to initiate the following procedures **at least 30 days prior** to the desired training date. The procedures are accomplished in the following order:

- a. The COTS Training Coordinator requests training using COTS Training Request Format via cc:mail to the ECS (SSO) Operations Trainer, the COTS Training Request Format must include the following information:
  - Student(s) name and DAAC representation
  - Training need
  - COTS course requested
  - Dates preferred
  - Price of COTS course
  - Manager approving purchase of training
  - Course location
  - Duration of course

- b. EDS (SSO) Operations Trainer) verifies that the training request meets the following criteria:
  - Relates to an ECS M&O function
  - Relates to COTS product in the ECS system design
  - Is cost effective and within budget constraints
- c. COTS Training Coordinator determines the proposed training details, including the following:
  - Training vendor
  - Individual or group training, based on cost effectiveness
  - On-site or off-site class location
  - Available vendor training dates
- d. (All COTS training must be approved by both the ECS (SSO) Operations Trainer and the ILS Manager prior to procurement.) COTS Training Coordinator forwards the training request to the ECS (SSO) Operations Trainer for approval, once approved by the ECS (SSO) Operations Trainer, it is then forwarded to the ILS Manager. The ILS Manager will either approve or deny the request.
- e. COTS Training Coordinator maintains record of approval of training purchase.

## **25.2 Coordinating COTS Training**

If the ILS Manager approves the request for COTS training, the COTS Training Coordinator will provide all vendor training details to the COTS Purchasing Manager. The COTS Purchasing Manager produces the purchase order and provides a copy to the COTS Training Coordinator, who will then order the training from the vendor. The procedures to coordinate training are accomplished in the following order:

- a. When approved, the COTS Training Coordinator submits all training details to the COTS Purchasing Manager.
- b. The COTS Training Coordinator orders training from the vendor.
- c. Purchasing Manager processes the purchase order and provides a copy to the COTS Training Coordinator.
- d. The COTS Training Coordinator forwards the purchase order to the vendor to reserve training.
- e. The COTS Training Coordinator generates a notice to students that includes training vendor, course, date(s), other relevant information.
- f. For on-site training, COTS Training Coordinator makes necessary arrangements for classroom space and equipment configuration; coordinates use of any operational equipment required for course, with on-going operations; forwards site location details to vendor instructor.
- g. Students attend training.

- h. Prior to Group COTS training, the COTS Training Coordinator provides students with a COTS Training Evaluation Form, which evaluates the effectiveness of the course. In cases when COTS training is found to be substandard or ineffective, the COTS Training Coordinator contacts the ECS (SSO) Operations Trainer, ILS Manager, and the DAAC or site manager, together they come to a consensus as to whether or not to pursue compensation for the training.
- i. Depending upon the decision rendered, the COTS Training Coordinator seeks refund, replacement training seat, or training credit from the vendor.
- j. The COTS Training Coordinator maintains training records for the DAACs, SMC, SEO, ILS and ECS Development in accordance with DIDs 622 and 525. Required record fields include: price, student name, vendor name, course name and number, course dates, and location.
- k. The (COTS Training Coordinator) will forward a copy of the training record to the ECS (SSO) Operations Trainer in format specified by DID 622.

### **25.3 Canceling/Rescheduling COTS Training**

COTS training vendors generally withhold all or part of registration fees for course seats canceled too close to the start date of training. The deadline for cancellation without penalty varies between vendors, **but the maximum deadline is three weeks prior to course start date**. In order to preserve ECS COTS training funds, any cancellations of COTS training by ECS personnel must be made before three weeks of the start date to avoid these financial penalties.

- If student(s) need to cancel within this three-week deadline, the (DAAC or site manager) will be responsible for substituting an equally qualified individual to attend the course, and for notifying the COTS Training Coordinator to ensure proper record keeping and registration with the vendor.

### **25.4 Maintenance of COTS Training Records**

The (COTS Training Coordinator) will maintain records of all training accomplished as specified in Training Plan DID-622-CD-001-005. COTS training records are maintained by the COTS Training Coordinator which monitors the allocation of funds and reports back to ECS (SSO) Operations Trainer to adjust the budget. The COTS Training Coordinator will submit training record information to the ECS (SSO) Operations Trainer for DID 625-CD-001-001 as specified in the Training Plan DID 622-CD-001-005.

### **25.5 Contractor COTS Training Funds Accounting**

COTS training funds will be allocated to each ECS M&O organization, based upon staffing levels and functions performed at the site. The COTS Training Coordinator maintains the training budget spreadsheets for each of the DAAC's, SMC, SEO, ILS and ECS M&O Development Facility. The COTS Training Coordinator updates the spreadsheets as training is complete and submits quarterly balance reports to the ECS (SSO) Operations Trainer for planning purposes.

While the coordination and purchasing responsibilities for COTS training fall primarily with the ECS COTS Training Coordinator, the ECS (SSO) Operations Trainer will be responsible to the M&O organization for spending the allocated COTS training budget judiciously.

Travel funds are not included in the COTS training budget. These must be secured from the organization to which each student belongs.

## 26. SSIT Operational Procedures

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The SSI&T operational procedures are given in this section. They are organized by activity. The order in which the procedures appear loosely follows the order in which they will usually be performed.

These procedures present the use of GUIs supplied in Release 4. Some procedures may have a command line equivalent; these are documented in the corresponding GUI help screens but are not presented here in the interest of simplicity. Version 2.0 Operations Tools Manual 609-CD-003-004 should be referred to for more detailed information on how to use GUI's and command line equivalent usage.

### **A Note about the Order of Procedures**

The science software I&T operational procedures contained within this document are ordered. The order is intended to *loosely* suggest a logical sequence which, when used as a "road map", represents an overall, sensible end-to-end SSI&T activity at the Release 4 DAACs. The ordering cannot, however, be interpreted as a detailed, step-by-step guide to SSI&T activities. In addition, since there are many factors that affect the actual SSI&T activities during Release 4 (e.g. Instrument Team deliveries, DAAC policies, agreements between the Instrument Teams and the DAACs, etc.), the ordering in this document can only be suggestive.

Many of the procedures outlined in this document are inter-related. A procedure may assume that another procedure has been completed. In general, the ordering of the procedures reflects this. The user should be aware, however, that this is not the case for all procedures. Therefore, depending on the SSI&T activity, the ordering suggested may not apply. Procedures may require other procedures that appear *after* the procedure requiring them.

### **Assumptions**

All procedures in this paper assume the following: that the Instrument Team has delivered the science software to the DAAC and that Release 4 ECS is available at the DAAC.

### **Conventions**

The following conventions are followed for explaining procedures:

Text that should be typed literally in the "Action" column of the procedures is displayed in *courier* font. Text within a literal command that represents a fill-in-the-blank object is displayed in *italic courier* font. (Example: `cd mydir` means type "cd" and then type the name of the correct directory.)

A command line in the "Action" column that should be typed in without a line break will be indicated by an indent in any following lines. The end of the command is indicated by <ENTER>, which stands for pressing the ENTER or RETURN key.

## **26.1 Science Software Integration and Test (SSI&T) Preparation and Setup**

### **26.1.1 Key Operator Roles**

**Science Coordinator:** Provide support to Instrument Teams for the integration and testing of science software in the ECS system at the DAAC. Perform standard checking on all delivered software including source code, scripts, process control files and related documentation.

**Science Data Specialist:** Serves as a point-of-contact for planning, integrating, testing, and operating science software.

**CM Administrator:** Record, report, manage and distribute new and updated science software.

**Science Software I & T Support Engineer:** Provide support to Instrument Teams for the development, integration, test and problem resolution of science software.

**Production Planner:** Populate, maintain and schedule the production planning database for science software.

### **MODIS Science Data Processing Software Version 2.0 System Description Manual**

This manual should be referred to for more detailed information on how to perform the SSI&T operational procedures as they apply to MODIS PGE's. It covers the specific attributes for each individual PGE and setup criteria.

### **26.1.2 COTS Software Tools**

**ClearCase:** This tool is used as the ECS software configuration management tool. ClearCase provides a mountable file system which is used to store version-controlled data, such as source files, binary files, object libraries and spreadsheets.

**Distributed Defect Tracking System (DDTS):** This tool is used to electronically process configuration change requests (CCRs). DDTS will prompt the user for relevant information, identify the request and will mail these requests to pre-designated personnel.

### **26.1.3 General Process**

**The SSI&T process consist of two activities:**

- **Pre-SSI&T Activity** - During this activity the Delivered Algorithm Package (DAP) is inspected, and tested in a non-production environment.
- **Formal SSI&T Activity** - During this activity, the Product Generation Executives (PGEs) are integrated with the DAAC version of the SDP Toolkit and executed on the ECS PDPS platform.

**Key Terms:**

- **Product Generation Executives (PGEs)** - The smallest scheduled unit of science software.

- **Delivered Algorithm Package (DAP)** - An ensemble of PGE source code, makefile, documentation, and other related files delivered in a package from the SCF to the DAAC for SSI&T..
- **Process Control File (PCF)** - Relate logical identifiers to physical files and other parameters required by the PGE.
- **Strings** - The processing hardware on which the science software runs.
- **Archive** - A File Storage Type indicating that granules that will be inserted Data Server are intended for long term storage and acquisition for distribution.
- **Collection** - A related group of data granules.
- **Granule** - The smallest data element which is identified in the inventory tables.
- **Product** - A set of output values generated by a single execution of a PGE for archival by ECS. A PGE may generate one or more products whose attributes are defined by the data provider.
- **Reliability** - Software reliability means that the software runs to normal completion repeatedly over the normal range of data inputs and running conditions.
- **Safety** - Software safety means that the software executes without interfering with other software or operations.

The science software in the DAPs will be integrated onto the PDPS and be used to produce the output data as determined by the algorithms. The refined and updated DAPs and data produced by the science software will eventually be provided to the subscribing user. Before the PGE is integrated into a production environment, extensive testing on the software must be performed.

The following list provides a suggested, logical “road map” for getting science software tested and integrated into the ECS. This list is not intended to cover every situation and variations may be required.

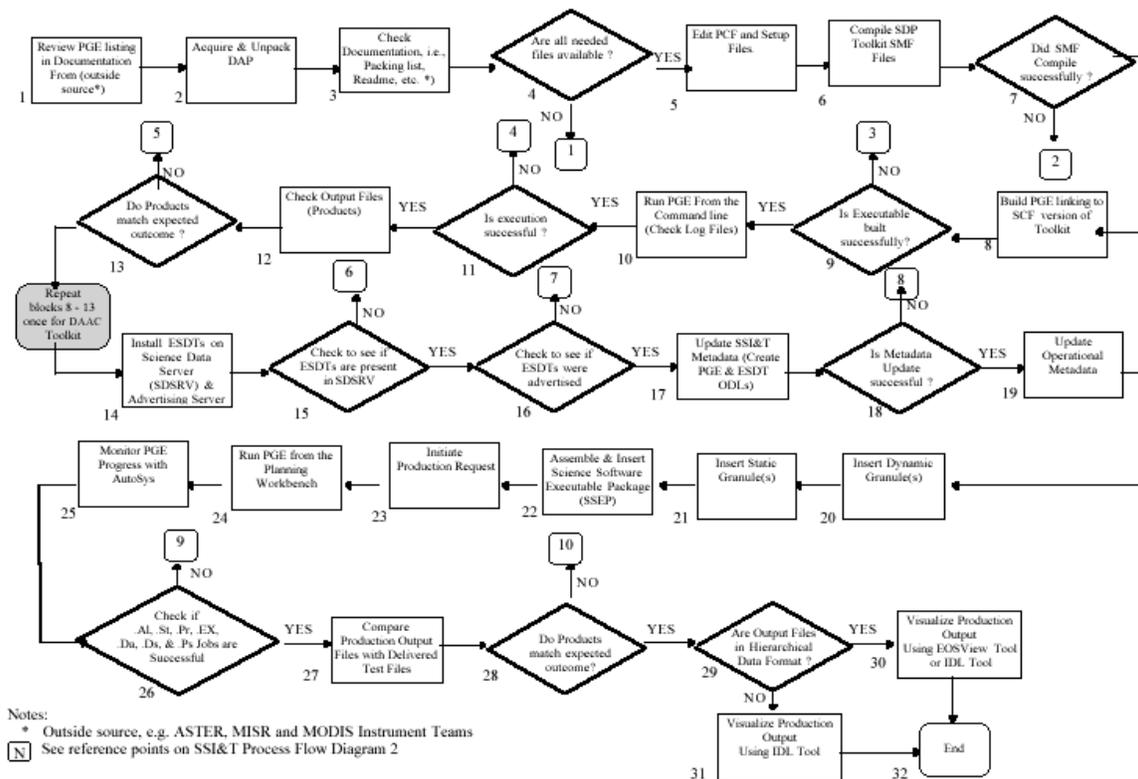
### 26.1.3.1 General

- Science Software Integration and Test (SSI&T) is the process by which the science software is tested for production readiness in the DAACs in order to assure its (1) reliability and (2) safety. Prior to the delivery of the ECS software to the DAACs, SSI&T Checkout is conducted on early versions of the Products Generation Executives (PGEs) using separate system modes in the ECS Mini-DAAC, VATC (Verification and Acceptance Test Configuration), or the DAAC environments.
- SSI&T activities can be broadly separated into two categories: pre-SSI&T and formal SSI&T. Pre-SSI&T activities are those which do not involve the ECS Planning and Data Processing (PDPS) or the Science Data Server (SDSRV), but the formal SSI&T activities do involve the full ECS including the PDPS and the SDSRV.
- Most steps in the SSI&T process are inter-related and some steps may assume that another step has been completed. The ordering of the steps is very important but it cannot, however be interpreted as a detailed, step-by-step guide to SSI&T activities.

- Science Software Integration and Test consists of the following activities most of which are fully detailed in Science Software Integration & Test Operational Procedures for the ECS Project (162-TD-001).
- The activities described in the following list are also depicted in a (SSI&T Process Flow Diagrams 1 and 2) see **Figure 26.1.3.1-1** and **Figure 26.1.3.1-2**. For a better quality depiction of these diagrams, refer to the Science Office Instruction No. SO-1-003 at the Web site listed in the next section below.

SSI&T PROCESS FLOW DIAGRAM 1

No.: SO-1-003 Rev.: Original Page 6 of 7



**Figure 26.1.3.1-1. SSI&T Process Flow Diagrams 1**

### 26.1.3.2 Science Office Project Instructions

The following are procedures listed from Science Office Project Instructions as they apply to the building of Science Data Products and SSI&T. A review of these documents is highly recommended at this time . They can be accessed from the Web using the following URL:

[http://dmsserver.gsfc.nasa.gov/proj\\_instr/sopi\\_index.html](http://dmsserver.gsfc.nasa.gov/proj_instr/sopi_index.html)

## Science Office ECS Project Instructions

<b>Number</b>	<b>Subject</b>	<b>Issue Date</b>
SO-1-002	Earth Science Data Type Generation Procedures PDF	5/11/98
SO-1-003	Science Software Integration and Test (SSI&T) PDF	9/14/98
SO-1-004	Science Office Science Support Internal Processes PDF, Science Office Science Support Internal Processes (161-IT-003-001)PDF	6/30/98
SO-1-005	Product Specific Attribute (PSA) Analysis PDF	7/23/98
SO-1-006	PGE Testing PDF	7/07/98
SO-1-007	Earth Science Data Types Testing and Integration PDF	7/24/98
SO-1-008	QA Metadata Update Tool (QAMUT) PDF	7/23/98
SO-1-009	Metadata Works PDF	7/23/98
SO-1-010	ECS Science Metadata Validates Update Procedures PDF	7/24/98
SO-1-011	Metadata-Process Established with MODIS PDF	8/20/98

SSI&T PROCESS FLOW DIAGRAM 2

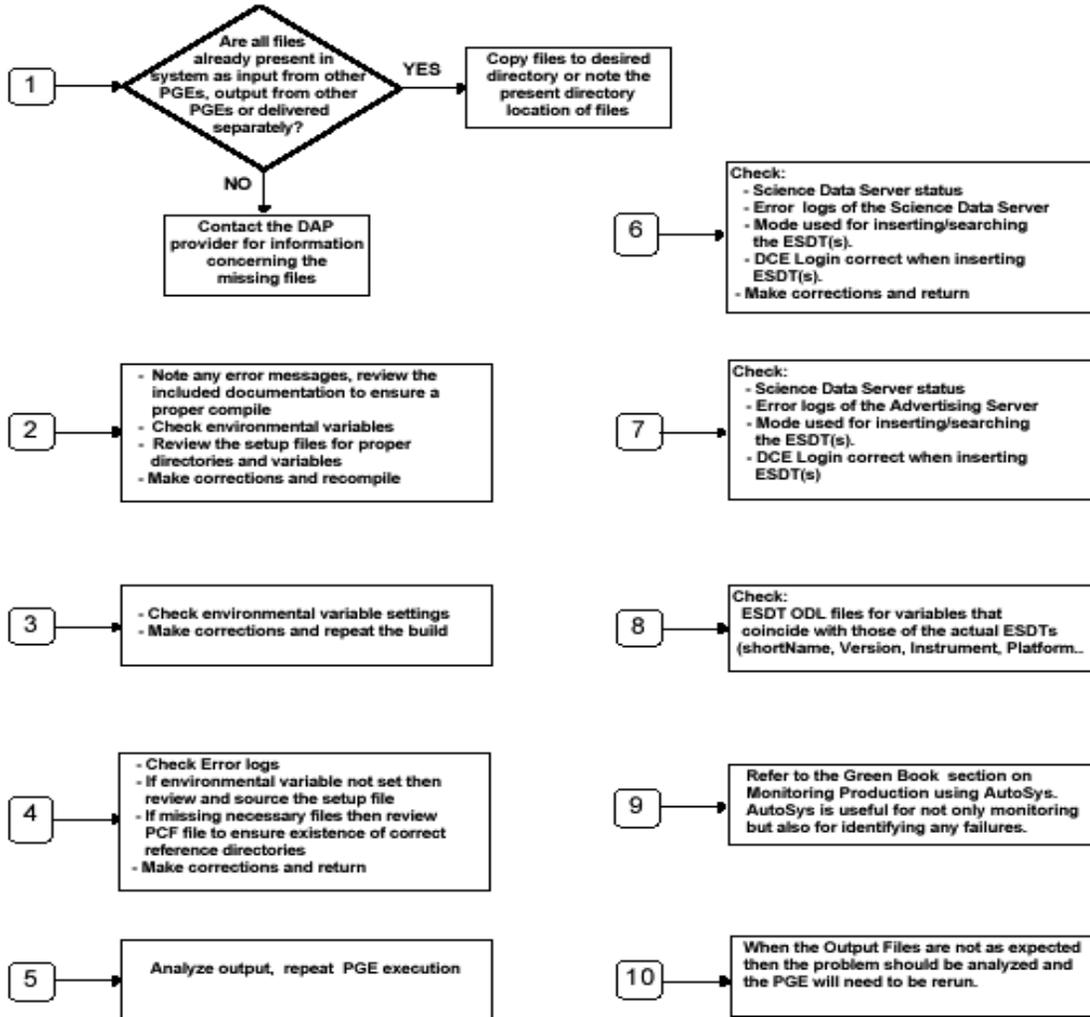


Figure 26.1.3.1-2. SSI&T Process Flow Diagrams 2

26.1.3.3 Pre-SSI&T Activities

- 1 As the DAP is delivered to a DAAC by the Instrument Team for SSI&T, the PGE listing documentation is reviewed.

- 2** The DAP is acquired and unpack and the documentation (i.e., packing list, readme, etc.) checked. The DAP contents are further checked by the Science Data Specialist to verify that the contents match the packing list, agreed-upon directory structures are employed, location of files are correct, and all intended files and directories are present.
- 3** The Science Data Specialist requests that the CM Administrator place the DAP under Configuration Management control using ClearCase.
- 4** The SSI&T team checks the science software for standards compliance using the Process Control File Checker to check process control files (PCF), and the Prohibited Function Checker to check source files. Extract and check prologs.
- 5** The SSI&T team builds the science software into PGEs using the SCF version of the SDP Toolkit. Compile all source code. Link object code with appropriate libraries. . If the SMF files compile successfully, then proceed to Step 11 below; otherwise. the problem needs to be fixed and a successful compile must occur before proceeding further. This may require one or more of the following:
  - 6** Note any error messages and review the included documentation to ensure a proper compile;
  - 7** Check environmental variables;
  - 8** Review the setup files for proper directories and variables;
  - 9** Make corrections and recompile.
- 10** If the executable builds successfully, proceed to Step 12. If the build fails, it may necessary to do one or more of the following before proceeding:
  - 11** Check environmental variables;
  - 12** Make corrections and repeat the build.
  - 13** Run the PGE from the Command Line.
- 14** If it the execution is successful, then the output files (products) are checked using the SSIT Manager file comparison tools; otherwise, one or more of the following needs to be done before proceeding:
  - 15** Check error logs;
  - 16** Check environmental variables;
  - 17** Review and source the setup files;
  - 18** If necessary files are missing, then review the PCF file to ensure the existence of correct reference directories.
- 19** The SSI&T team runs and profiles the PGEs from the UNIX command line on the SGI, saving the profiling results. They will be used later when entering operational metadata into the PDPS.
- 20** The SSI&T team collects performance statistics for the PGEs.

- 21 The SSI&T team examines the output log files from the PGE runs for any anomalous message. The SSI&T team compares the output product data with the delivered test data using the file comparison tools. If the products do not match the delivered test outputs (expected outcome), the outputs should be analyzed and the PGE must be re-run. If the products match the delivered test outputs then
- 22 Steps 10 through 13 are repeated once using the DAAC Toolkit. If the products generated with the DAAC Toolkit match the delivered test output, formal SSI&T may begin.
- 23 SSI&T team reports any science software problems using the DDTs NCR process.
- 24 The SSI&T team reports any ECS problems using the DDTs NCR process.
- 25 The SSI&T team collects and logs all lessons learned.

#### **26.1.3.4 Formal SSI&T Activities**

- 1 For each ESDT used by the PGE, construct an ESDT ODL file for updating the PDPS or verify that they already exist. ESDT ODL files are also needed for all input and output data granules.
- 2 Construct a PGE ODL file for updating the PDPS database. This involves using the delivery PCF to construct an initial PGE ODL template file, which must then be hand edited to add required metadata. A mapping between logical IDs in the PCF and ESDT ShortNames must be known before this step is done.
- 3 Install ESDTs on the Science Data Server if verification indicates that they do not already exist. Installation links the PGE to all input and output ESDTs which allows the PGE to run within the PDPS. The Advertising Server must also receive notification of the update. If this fails then the ESDT's must be re-installed again after removing original ESDT's from the SDSRV. Note: While installing ESDT's the SDSRV intermittently coredumps. To clean-up you must remove the ESDT from ADSRV, SBSRV and DDICT and then try again.
- 4 The SSI&T Metadata is updated (PGE & ESDT Object Description Language or ODLs are created). This supplies metadata to the PDPS database
- 5 If the Metadata update is successful, then the Operational Metadata is updated; otherwise, the ESDT ODL files may have to be checked for correctness before updating the Operational Metadata.
- 6 Register the PGEs with associated data in the PDPS database. This step uses the PGE ODL from step 22 above.
- 7 For each input dynamic data granule needed by the PGE, construct a Target MCF and insert it to the Science Data Server.
- 8 For each input static granule needed by the PGE, construct a Target MCF and insert it to the Science Data Server.
- 9 Assemble the SSEP (as a tar file) and Insert it to the Science Data Server.
- 10 Initiate a Production Request (PR) that will result in one or more DPRs.

- 11 Use the Planning Workbench to plan the PR and hence, run the PGE.
- 12 Monitor the PGE run using AutoSys. The PGE's progress is monitored using the AutoSys COTS. The distinct steps that are visible on the AutoSys GUI and whose success is evident are Resource Allocation (.Al), Staging (.St), Pre-Processing (.Pr), Execution of the PGE (.EX), Post-processing (.Ps), De-staging (.Ds), and De-Allocation of resources (.Da).
- 13 If any of the steps in the execution is not successful, then each failure must be identified and corrected before proceeding to the next step.
- 14 Examine the output Production History File from the PGE runs for any anomalous messages. Compare the output product data with the delivered test data using the file comparison tools. . If any of the steps in the execution is not successful, then each failure must be identified and corrected before proceeding to the next step.
- 15 If the output files match the test output files and they are in Hierarchical Data Format (HDF), they are visualized using the EOSView tool, or the Interactive Display Language (IDL) tool. If the files are not HDF, then IDL is used.
- 16 Using the Planning subsystem, initiate more complex Production Requests if chaining is required.
- 17 Using electronic or hard media transfer methods, distribute the data products to the Instrument Teams for their review.

## RECORDS

A weekly SSI&T status report is provided to NASA. This report contains the Performance Measurement Data.

## PERFORMANCE MEASUREMENTS

SSI&T PGEs planned vs. actually delivered, pre-tested, and integrated is the metric used to monitor the effectiveness of the process described in the Procedure. Additionally, the Duration of Effort Required to Integrate in Work Days is used.

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### 26.1.4 Preparation and Setup

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- 1 Log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.
- 2 Enter the **password** then press the **Enter** key.  
Prior to the remote login, enter **setenv DISPLAY <local workstation IP address>:0.0** where the local workstation IP address represents the IP address you where you are located. You may need to setup the terminal so that the remote host is displayed on your screen. (Sun machine) This is done by clicking on the **Application Manager** icon (the file drawer located at the bottom of the screen), followed by the **Desktop Tools** icon, followed by the **Terminal Console** icon
- 3 Perform a remote login by typing **rlogin [host]** then press the **Enter** key.  
The **Enter Password** prompt is displayed.

- 4 Enter the **password** then press the **Enter** key.
- 5 Enter the directory where the setup script is located by typing **cd** [directory name] then press the **Enter** key.
- 6 Source the setup script by typing **source** [script name] then press the **Enter** key.

The setup script contains directory paths, sets of alias commands, and tools for SSI&T.

- For example, source the SSI&T script: Type **source /usr/ecs/{MODE}/CUSTOM/utilities/.buildrc <RETURN>**  
Note: This step only needs to be done once per login.
- **source .buildrc** may not be supported on a particular software drop. Therefore the SSI&T scripts will be built into other another script.

- 7 To ensure access to the multi server environment when needed, the following generic login commands have been established and should be used routinely:

- From a terminal: **xterm -n (host) &**
- From the xterm invoked: **telnet (host)**
- **login cmts1**
- **pw: ecsu\$er**
- **dce\_login DCE\_user\_name DCE\_password and then press Enter Key.**  
**DCE is an acronym for a Distributed Computing Environment.**
- **setenv DISPLAY .....:0.0**

- 8 Listed are some of the GUI tools, typical servers (examples and their Host that need to be considered for activation when conducting SSI&T:

- **ECS Assistant, ADSRV/DM/IOS, p0ins02,**
- **ECS Assistant, SDSRV/DSS, p0acs03**
- **ECS Assistant, DPS, p0sps06**
- **ECS Assistant, SBSRV/CSS/IOS, p0ins01**
- **SSIT Manager tools, AITTL/DPS t1ais01**
- **Production Request, PLS, odyssey**
- **Planning Workbench, PLS, odyssey**  
**Note: NETSCAPE should be closed to allow for a full screen GUI to be activated.**
- **Monitor PGE, odyssey**

- 9 A second xterm should be activated with the same login procedures so as to monitor the (log files) when entering SSI&T files from GUI's.

- 10 Servers can be brought down in any order. To bring them backup requires that they be brought up in a **sequential order to ensure connectivity**, the order is listed as follows:

- **STMGT, MSS, DDIST, IOS, SDSRV, PDPS**
- 11 The above servers have unique hosts assigned. Each host needs to be logged into the **generic login: ID, pw:, dce\_login DCE\_user\_name DCE\_password and then press Enter Key.** before activating ECS Assistant to carryout the downing and bringing up of servers assigned to their respective hosts.

### 26.1.5 SSIT Software Operating Instructions:

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#### Starting the SSIT Manager GUI:

On workstation **x0ais##**, at the UNIX prompt in a terminal window, type as in step 1 below your user id and password.

NOTE: The **x** in the workstation name will be a letter designating your site:

**g** = GSFC, **m** = SMC, **l** = LaRC, **e** = EDC, **n** = NSIDC, **o** = ORNL, **a** = ASF, **j** = JPL; the **##** will be an identifying two-digit number (e.g., **g0ais01** indicates a Data Processing Subsystem (DPS) workstation at GSFC).

Prior to the rlogin, enter **setenv DISPLAY <local\_workstation IP address>:0.0**. The **<ipaddress>** is the ip address of **x0ais##**, and **xterm** is required when entering this command on a Sun terminal.

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1 **Example:** Log into an Algorithm and Test Tools (AITTL) environment using using a machine so configured. At the PVC this machine is **p0ais01**. A special host has been established using the **id:** and **password:.** Type: **setenv DISPLAY ....:0.0**

2 *Login to DCE (dce\_login <DCE\_user\_name DCE\_password and then press Enter Key.>)*

What the user must do before trying SSIT functionality:

3 **setenv <mode> : (cd /usr/ecs/<MODE>/CUSTOM/utilities** Note that this only has to be done once per login.

4 This directory should contain scripts pertaining to setting the environment for SSIT Manager. Type in: **EcDpAtMgrStart <mode> &**

- This invokes the **SSIT Manager GUI** which should be displayed.

What must be done via SSIT tools:

Since SSIT is just a calibration of various tools, there is no specific order for which they must be run. Most tools can be brought up from the SSIT Manager GUI as well as started on their own.

The File menu provides the capability to exit the manager. The Tools menu provides access to the various tools that make up SSIT. The Run menu is customizable (allowing you to add your own scripts and tools) by editing the file *ssit\_run\_menu* in the *data/DPS* directory.

The checklist (first window on the GUI) allows you to check off various activities by double clicking on them. You may enter a commentary on the activity in the second window when

checking off a particular item. The file checklist.sample in the data/DPS directory can be edited to change the items in the checklist or its' location.

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### 26.1.6 Updating the Leap Seconds and the Earth Motions files

The toolkit requires Leap Second and Earth Motion updates, weekly and twice weekly respectively, to accurately compute most time conversions. The following scripts have been established to accomplish these tasks as part of ECS support.

- **update\_leapsec.sh**

This script updates the leapsec.dat file by ftp-ing to USNO and reformatting the information into the leap seconds file: \$PGSHOME/database/common/TD/leapsec.dat

The present script, after obtaining the required file "tai-utc.dat" in the same Series 7 mentioned above, invokes PGS\_TD\_NewLeap, a C program that performs the actual update work. The function puts the current date in the header of the new leapsec.dat, with a remark that the file was either "Checked" (no new leap second) or "Updated" (new leap second). The date at which the USNO file used in the updating process was put on their server is also listed in the header.

- **update\_utcpole.sh**

This script updates the **utcpole.dat** file on the basis of new data obtained by ftp to the U.S. Naval Observatory in Washington, D.C (USNO). Their data file is excerpted and the required fields are reformatted and written into the utcpole file: \$PGSHOME/database/common/CSC/utcpole.dat

- **The Leap Seconds file:**

**leapsec** - file ID: \$PGSHOME/database/common/TD/leapsec.dat

(Atomic time from International Earth Rotation Service)

Introduced every 12 to 24 months, announced almost 6 months in advance or as little as 90 days notice. Update available from U.S Navy Observatory (USNO).

**Interval of update recommend: weekly, except Sundays 17:45 hours to 17:55 Eastern US time.** Runtime is approximately 30 seconds.

- **The Earth Motion file:**

**utcpole** – file ID: \$PGSHOME/database/common/CSC/utcpole.dat

(Record of the Earth's variable of slowing rotation with respect to UTC Time.)

**Interval of update recommended: Twice weekly except Sundays 17:45 hours to 17:55 Eastern US time. Recommended scripts be run in the afternoon or evening each Tuesday and Thursday.**

### 26.1.7 Script Name: update\_leapsec.sh

The following processing tasks are carried out automatically by the use of this script:

- **Update via: Ftp to USNO, "maia.usno.navy.mil" file accessed for leapsec: tai-utc.dat. (Tests connectivity by using "ping')**

- **Function to be applied: PGS\_TD\_NewLeap**, excerpts and reformats the new information and appends new data and date to **leapsec.dat** file. A remark that the file was either “Checked” (no new Leap second) or “Updated” (new leap second).  
26.2.2 Script Name: update\_utcpole.sh

The following processing tasks are carried out automatically by the use of this script

- **Update via: Ftp to USNO, “maia.usno.navy.mil” file accessed for utcpole: finals.data. (Tests connectivity by using “ping”)**

**Function to be applied: PGS\_CSC\_UT1\_update**, excerpts and reformats the new information and appends new data to **utcpole.dat** file.

#### **Guidelines:**

- 1** The script must be run on a machine that has the Toolkit mounted and which can access the USNO site via ftp and access e-mail. (p0spg01 used at the Performance Verification Center (PVC))
- 2** For each installed Toolkit (including all modes, such as debug, F77, F90, etc.) the scripts need to be run only once, even if different platforms or operating systems are run. However, if entirely separate Toolkits exist at your installation, with different \$PGSHOME home directories, then either the scripts need to be run in each, or the data files can be propagated from a primary Toolkit to the others.
- 3** It is highly desirable to have outgoing e-mail mounted on the machine of choice, so that error messages may be issued automatically from the scripts in case of failure.
- 4** If the updating process fails, then the script must be rerun. The Toolkit team should be contacted anytime the scripts are not giving the correct or accurate information. It is highly desirable to have outgoing e-mail mounted on the machine of choice. The 2 sets of scripts do also send an email message to SDP Toolkit mail address when a script fails
- 5** The Toolkit requires that the two data files not be too stale. Therefore the useful lifetime of the utcpole.dat and leapsec.dat files is 83 days. The Toolkit will issue an error message if no update was performed beyond 83 days. If this occurs you can expect geolocation accuracy to deteriorate to an extent that could require re-running for some of the more stringent users. If Toolkit requires a leap second value after this date, an error message will be returned. This generally means that production will cease.
- 6** Keep the Latest files until your updates are completed! They are useful for a backup should they be needed.

## Hardware Needed and Setup Procedures

The user's environment needs to be set up by running the script `$PGSBIN/pgs-dev-env.csh` or `$PGSBIN/pgs-dev-env.ksh`, depending on the shell being used. `$PGSBIN` stands for `$PGSHOME/bin/mach`, where "mach" stands for one of: sun5, sgi64, sgi, sgi32, ibm, dec, or hp. In other words it is a shorthand for the machine "flavor" you are using, and for sgi, the compiler option. Not all versions are necessarily at each DAAC or SCF, and in some cases the path may be more complicated. For example, at Goddard Space Flight Center DAAC, typical binary directories are `/usr/ecs/OPS/CUSTOM/TOOLKIT/toolkit/bin/sgi64_daac_f77/`, or `/usr/ecs/OPS/CUSTOM/TOOLKIT/toolkit/bin/sgi64_daac_f90_debug/`, for example.

Once the setup script is located and sourced, `$PGSBIN` is defined and your path includes it. Furthermore, a "PCF", or process control file, `$PGS_PC_INFO_FILE` is defined, which allows the executable functions invoked by the scripts to find the old data files, which are needed for the updates.

To run the scripts successfully, you must have write permission on the data files.

After the setup is done, just run the scripts. Both scripts (`update_utcpole.sh` and `update_leapsec.sh`) are located in the directory `$PGSBIN`, which will be in your path after the Setup script has been run.

On workstation `x0spg##`, at the UNIX prompt in a terminal window, type **source /data3/ecs/TS1/CUSTOM/daac\_toolkit\_f90/TOOLKIT/bin/sgi64/pgs-dev-env.csh** . This will set up the various environment parameters, such as `PGSHOME`, to enable the 64 bit version of the FORTRAN 90 compiler to be run.

NOTE: The **x** in the workstation name will be a letter designating your site: **g** = GSFC, **m** = SMC, **l** = LaRC, **e** = EDC, **n** = NSIDC, **o** = ORNL, **a** = ASF, **j** = JPL; the **##** will be an identifying two-digit number (e.g., `g0spg03` indicates a Science Processor Subsystem workstation at GSFC).

Prior to the `rlogin`, enter **setenv DISPLAY <local\_workstation IP address>:0.0**. The **<ipaddress>** is the ip address of `x0spg`

**Example: To Update the Latest Leapsec.dat and Utcpole.dat files perform the following steps:**

---

- 1 telnet to a machine that supports the Toolkit. (`telnet p0spg01`)
- 2 login: **ID**, Password: **Ä**
- 3 **setenv DISPLAY .....:0.0Ä**
- 4 **setenv PGSHOME /usr/ecs/OPS/CUSTOM/TOOLKIT/toolkitÄ**
- 5 **cd /usr/ecs/OPS/CUSTOM/TOOLKIT/toolkit/bin/sgi\_daac\_f77** then
- 6 **source pgs\_dev-env.cshÄ**
- 7 For leapsec: **cd /usr/ecs/OPS/CUSTOM/TOOLKIT/toolkit/database/common/TDÄ**
- 8 **cp leapsec.dat leapsec.dat\_oldÄ**
- 9 Know thread for Leap Second run:
- 10 **cd /usr/ecs/OPS/CUSTOM/TOOLKIT/toolkit/src/TD** then do `ls - select: update_leapsec.sh` or run script for Leap Second type in: **update\_leapsec.sh**

## A successful update will look like the following

```
P0spg01 {cmops}[288]->update_leapsec.sh
```

```
Status of PGS_TD_NewLeap call was (0)
```

```
Status of MOVE command was (0)
```

- 1 For **utcpole**:
  - 2 **cd /usr/ecs/OPS/CUSTOM/TOOLKIT/toolkit/database/common/CSC**
  - 3 **utcpole.dat utcpole.dat\_old**
  - 4 Know thread for utcpole run:
  - 5 **cd /usr/ecs/OPS/CUSTOM/TOOLKIT/toolkit/src/CSC** then do **ls - select:**  
update\_utcpole.sh or run script for utcpole type in: **update\_utcpole.sh**
  - 6 A successful update will look like the following:  
p0spg01 {cmops}[294]->update\_utcpole.sh  
Status of PGS\_CSC\_UT1\_update call was (0)  
Status of MOVE command was (0)
- 

## 26.2 Science Software Integration and Test (SSIT) Manager

### 26.2.1 SSIT Manager Overview

The principal tool used during SSI&T is the SSIT Manager. The SSIT Manager is the top-level graphical user interface (GUI) environment presented to SSI&T personnel. Its purpose is to bring together the tools needed for SSI&T into a single, graphical environment.

Across the top of the SSIT Manager are the toolbar items **F**ile, **T**ools, and **R**un. Clicking on each of these invokes a pull-down menu.

Under the **F**ile pull-down menu, the only item is **E**xit. Clicking on this causes the SSIT Manager to terminate.

The **T**ools pull-down menu has most of the SSIT Manager's tools. The menu items are:

- **C**ode Analysis contains
- **S**PARCwork - A COTS package provided by Sun that allows for various coding activities including memory checking and debugging.
- **O**ffice Automation contains
- **M**SWindows - a Microsoft Windows emulator with MS Office (Word, Excel, PowerPoint) installed.
- **G**hostview - for viewing PostScript formatted documents.
- **N**etscape - WWW browser and useful for viewing HTML formatted documents.
- **A**crobat - for viewing PDF formatted documented.
- **D**DTS - for entering and tracking science software problems.

- **Standards Checkers** contains
- **FORCHECK** - for standards checking for FORTRAN 77 and Fortran 90 science software source code.
- **Prohibited Function Checker** - for checking science software source code for prohibited functions.
- **Process Control File Checker** - for checking Process Control Files (PCFs) delivered with science software.
- **Prolog Extractor** - for extracting prologs from science software source code.
- **Product Examination** contains
- **IDL** - Interactive Data Language tool supported by Sun. SSIT puts the user in the

IDL environment.

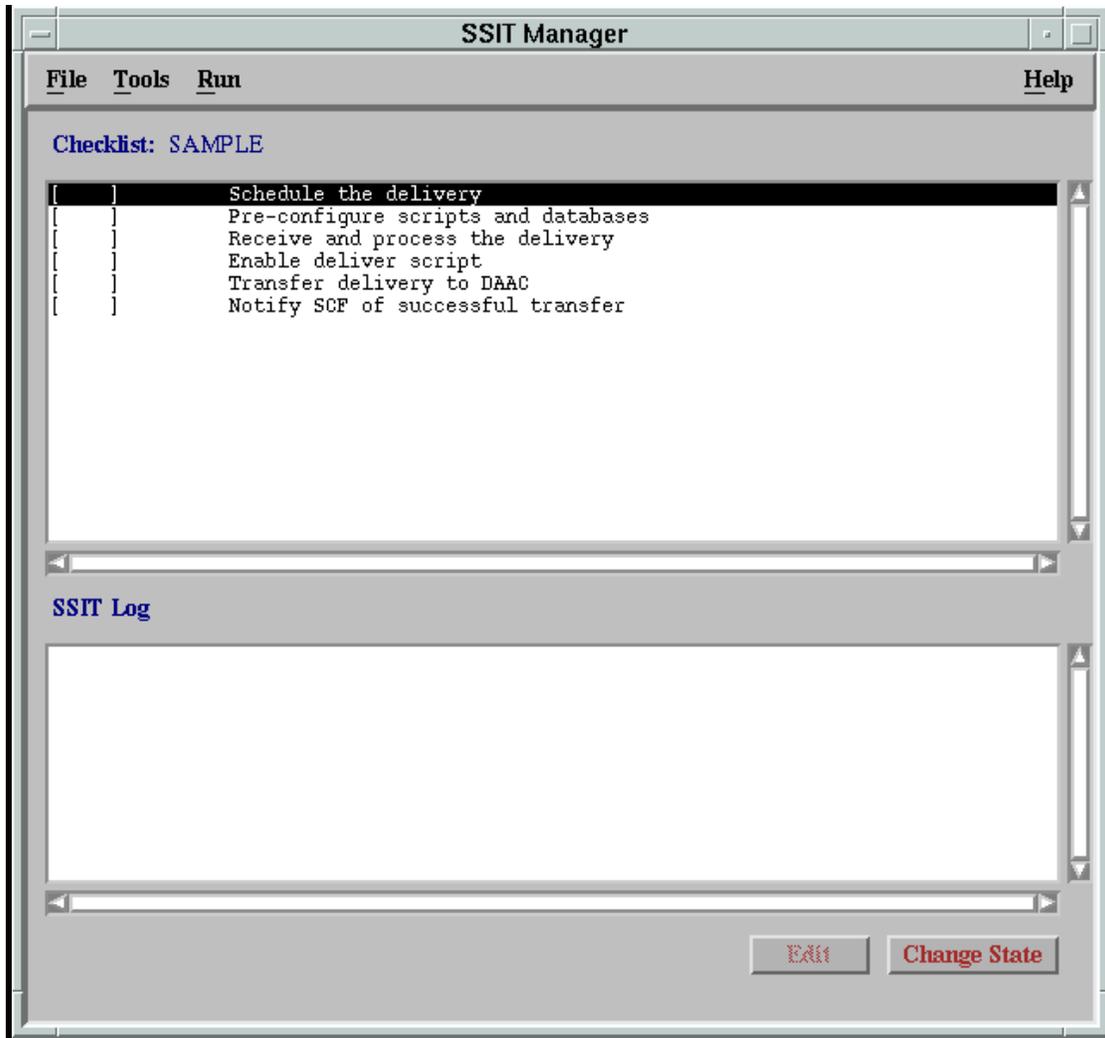
- **EOSView** - for viewing HDF and HDF-EOS files.
- **File Comparison** contains
- **ASCII** - for comparing two output products that are in ASCII format.
- **Binary** - for comparing two output products that are in binary format.
- **HDF (GUI)** - for comparing two output products that are in HDF or HDF-EOS format, GUI version.
- **HDF (**hdiff**)** - for comparing two output products that are in HDF or HDF-EOS format, command line tool.
- **Text Editors** contains
- **Emacs**
- **Xedit**
- **vi**
- **PDPs Database** contains
- **PCF ODL Template** - for converting delivered PCFs into ODL during PGE registration.
- **Check ODL** - for verifying ODL syntax of ODL files.
- **SSIT Science Metadata Update** - for updating the PDPS database with PGE information during PGE registration.
- **SSIT Opnl Metadata Update** - GUI for updating the PDPS database with PGE information during PGE registration.

- **Copy SSIT -> Production** - for copying PGE registration database information from SSI&T mode to Production mode.
- **Data Server** contains
- **Acquire DAP** - for acquiring a Delivered Algorithm Package (DAP).
- **Get MCF** - Source MCF is a Metadata Configuration File used to create a Target MCF (.met) for a Dynamic/Static Granule
- **Insert Static** - for inserting a static data file to the Data Server.
- **Insert Test Dynamic** - for inserting a dynamic test data file to the Data Server.
- **Insert EXE TAR** - for inserting a Science Software Executable Package (SSEP) to the Data Server.
- **SSAP Editor** - for editing and creating a Science Software Archive Package (SSAP) and inserting it to the Data Server.

The **Run** pull-down menu initially contains no menu items. Its purpose, however, is to allow a place for SSI&T personnel to place their own custom tools and scripts.

### 26.2.2 SSIT Manager GUI

This GUI (Figure 26.2-1) is the starting point for SSI&T activities. It provides access to a collection of tools that will be useful for this purpose.



**Figure 26.2-1. SSIT Manager Window**

### 26.2.2.1 General Set Up of the SSIT Manager

The SSIT Manager requires a configured environment within which to run; it runs only on the AIT Suns. The set up steps described in this section need only be done the first time a SSI&T operator uses the SSIT Manager

**To set up the environment for the SSIT Manager, execute the procedure steps that follow.**

(This procedure was tested by `telnet p0ais01, ID: cmts1, PW: ecsu$er, setenv DISPLAY 155.157.123.34:0.0` or `setenv DISPLAY p0ais01:0.0` .

- 1 login to: `dce_login DCE_user_name DCE_password` and then press Enter Key.
- 2 `setenv ECS_HOME /usr/ecs & setenv <mode>`

- 3 **cp /usr/ecs/mode/CUSTOM/data/DPS/DpAtMgrInternal.pcf \$HOME/mySSITpcf**, press **Return**.
    1. The *mode* is the ECS mode in which you are operating. This mode should be **TS1**.
    2. The *mySSITpcf* is the file name of the private copy of the PCF that the SSI&T operator will use when running the SSIT Manager. The **\$HOME** is the environment variable for the user's home directory. For example, **cp /usr/ecs/TS1/CUSTOM/data/DPS/DpAtMgrInternal.pcf \$HOME/myPCF**, press **Return**.
  - 4 At the UNIX prompt on the AIT Sun, type **setenv PGS\_PC\_INFO\_FILE \$HOME/mySSITpcf**, press **Return**. (Check **env** for proper home path)
    3. The *mySSITpcf* is the full path name to the private copy of the PCF to be used with the SSIT Manager when you run it (from step 1).
    4. It may be useful to add this line to your **.cshrc** (or other start up script) so that it is set every time you login.
  - 5 At the UNIX prompt on the AIT Sun, type **cd /usr/ecs/mode/CUSTOM/utilities**, press **Return**.
    5. The *mode* is the ECS mode in which you are operating. This mode should be **TS1 or another mode assigned beforehand to operate in**.
  - 6 At the UNIX prompt on the AIT Sun, type **EcDpAtMgrStart <mode> &**
    - This invokes the **SSIT Manager GUI** which should be displayed.
    - The checklist displayed within the GUI will be the default.
    6. This sets environment variables and other settings needed for running the SSIT Manager.
- 

### 26.2.2.2 Set Up of a Checklist for the SSIT Manager

The SSIT Manager offers the capability of maintaining user-defined checklist of SSI&T activities. The checklist is presented in the main window of the SSIT Manager. A default checklist is displayed unless a new checklist is specifically created. This procedure explains how to set up a customized checklist.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

#### Creating a User-Defined Checklist for the SSIT Manager:

---

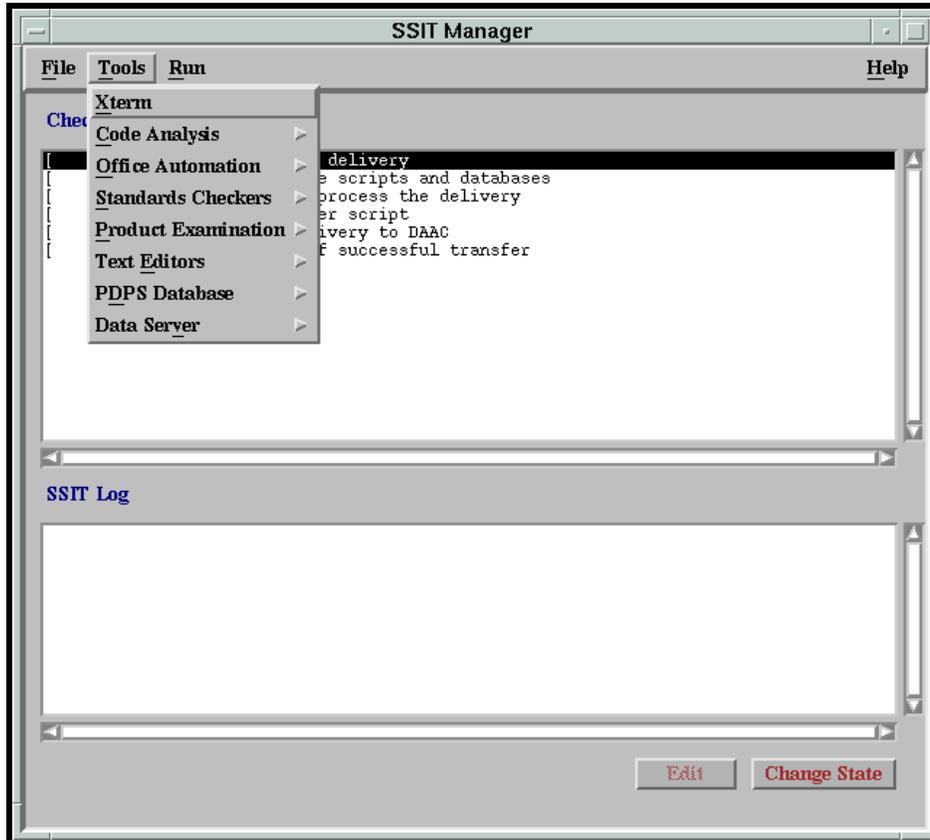
- 1 a From the SSIT Manager, click on the **Tools** menu, then choose **Product Examination**, then **EOSView**.
  - The EOSView GUI will be displayed.
- 1 b Alternately, if EOSView isn't available from the SSIT Manager GUI, invoke EOSView from the command-line.  
Go to the proper area by typing **cd /usr/ecs/TS1/CUSTOM/eosview <RETURN>**

Start EOSView by typing **EOSView** <RETURN>

- 2 In the GUI labeled **EOSView - EOSView Main Window**, click on the **File** menu and select **Open**.
    - The **Filter** GUI will be displayed.
  - 3 In the subwindow labeled **Filter**, enter full path name and file name wildcard template. For example, enter */home/MyDirectory/MySubdirectory/\**.
    - The */home/MyDirectory/MySubdirectory/\** represents the location to the directory containing the HDF-EOS files to examine.
    - The asterisk (\*) is a wildcard template that represents all files in that directory; other wildcard templates can narrow the search further, e.g. *\*.hdf*.
    - Use the **Directories** field to further select the correct directory.
    - Files found matching the wildcard template in the chosen directory will be displayed in **Files** subwindow.
  - 4 In the **Files** subwindow, click on the file name of the HDF-EOS file to examine. Then click on the **OK** button.
    - A GUI labeled **EOSView - MyOutputFile.hdf** will be displayed where *MyOutputFile.hdf* is the file name of the file chosen in step 3.
    - Be patient - this GUI may take some time to appear, particularly for large files.
    - Once displayed, a list of HDF objects will appear in the main window. If nothing is listed, it means that no HDF objects were found within the file.
  - 5 In the GUI labeled **EOSView - MyOutputFile.hdf**, click on an object listed for which metadata is to be inspected.
    - The object selected will be highlighted.
    - Do not double click on object since this will cause a **Dimension** GUI to be displayed instead.
  - 6 In the GUI labeled **EOSView - MyOutputFile.hdf**, click on the **Attributes** menu and select **Global**.
    - A GUI labeled **EOSView - Text Display** will be displayed.
    - The global metadata associated with the object selected (in step 5) will be displayed in a scrollable field.
    - If instead, the message “Contains no Global Attributes” appears, then the selected object contains no global metadata.
  - 7 Repeat steps 5 and 6 for each HDF object within the selected HDF-EOS file for which metadata is to be examined.
  - 8 In the GUI labeled **EOSView - MyOutputFile.hdf**, click on the **File** menu and select **Close**.
    - The **EOSView - MyOutputFile.hdf** GUI will disappear.
    - Be patient - this GUI may take some time to disappear, particularly for large files.
  - 9 In the GUI labeled **EOSView - EOSView Main Window**, click on the **File** menu and select **Exit**.
    - The **EOSView - EOSView Main Window** GUI will disappear.
-

### 26.2.3 SSIT Manager Tools

There are several tools that are accessible through the SSIT Manager GUI. After selecting the TOOLS menu option of the menu bar, a set of options is available. See Figure 26.2.3-1, which indicates the use of the Tool menu item.



**Figure 26.2.3-1. SSIT Manager Window - Tools Menu**

### 26.2.4 Using the SSIT Manager:

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. The source file(s) are available, accessible, and have read permissions.
3. The below listed formatted text (ASCII) files containing the list of prohibited functions exist in the directory stored in the environment variable DPATMGR\_DAT:
4. prohibitedFunctionsAda.txt
5. prohibitedFunctions.C++.txt
6. prohibitedFunctions.C.txt
7. prohibitedFunctions.F77.txt

8. prohibitedFunctions.F90.txt
  9. If the source code files to be checked are in a VOB in ClearCase, a view has been set before the SSIT Manager was started.
- 

## 26.3 Delivered Algorithm Package (DAP) - Acquiring, Unpacking, Subscription

The Delivered Algorithm Package (DAP) is the vehicle by which the PGE, source code, supporting files, documentation, etc. are delivered to a DAAC for SSI&T. Typically, the DAP is a compressed TAR file with a file name of form *string.tar.Z*. After initial processing, the DAP is broken apart into its components and those components will be subsequently processed and used based on their intended function.

The delivery mechanism for DAPs can be electronic (e.g. via UNIX ftp) or physical media (4 mm or 8 mm digital audio tapes).

### 26.3.1 Acquiring the Delivered Algorithm Package (DAP)

The following procedures are used by the SSIT team to acquire DAPs.

#### 26.3.1.1 Acquiring the DAP via FTP

FTP is another method that the SSIT team uses in order to receive the science software. The following example demonstrates the FTP of the tar file from a remote machine.

---

#### Acquiring the DAP via FTP

---

- 1 Log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.
- 2 Enter the **password** then press the **Enter** key.
- 3 At a UNIX prompt, type **cd DeliveryPathname**, then press the **Enter** key.
  7. The **DeliveryPathname** is the full path name to the directory that has been set aside for ftp pull of DAPs from the Instrument Team. For example, **cd /home/user** where **user** is the user's login directory, then press the **Enter** key.
  8. If the DAP is to be copied into a subdirectory, change to this subdirectory.
- 4 At a UNIX prompt, type **ftp machineIPaddress**, then press the **Enter** key.

The **machineIPaddress** is the IP address or fully qualified domain name of the remote SCF machine. For example, **ftp 192.266.53.2**, then press the **Enter** key.  
Or for example, **ftp aitg2sun.gsfc.ecs.nasa.gov**, then press the **Enter** key. The remote machine will likely display some messages and then prompt for a login name.  
An ftp session is established.
- 5 At the ftp prompt on the remote machine, enter user login name, then press the **Enter** key.

The remote machine will typically respond with **331 Password required for username:**
- 6 At the ftp prompt on the remote machine, enter user password, then press the **Enter** key.

9. The remote machine will typically respond with **230 User *username* logged in** and display the **ftp>** prompt for further ftp commands.
- 7 At the ftp prompt on the remote machine, type **cd *DAPpathname*** then press the **Enter** key.
10. The ***DAPpathname*** is the full path name to the directory on the remote machine containing the DAP to retrieve. For example, **cd /home/mac** , then press the **Enter** key. The directory location should be known.
- 8 At the ftp prompt on the remote machine, type **binary**, then press the **Enter** key.
11. The **binary** command causes subsequent file transfers to be in binary mode, preserving the integrity of the file to retrieve without interpretation (as would be done in ASCII mode).
12. The system will typically respond with the message **200 Type set to I** indicating that binary mode has been set.
- 9 At the ftp prompt on the remote machine, type **get *DAPfilename***, then press the **Enter** key.
13. The ***DAPfilename*** is the file name of the DAP to retrieve.
14. • For example, type **get TestPGE.tar**, then press the **Enter** key.
15. The user may need to type **dir** then press **Enter** to display a listing of the files in the current directory. The system will likely display several lines of messages once the transfer has completed. For large files, this may take a long time (minutes to hours depending upon the size of the DAP and the bandwidth of the connection).
- 10 At the ftp prompt on the remote machine, repeat step 9 or type **quit**, then press the **Enter** key.
16. Typing **quit** and pressing **Enter** closes the ftp connection with the remote machine.
17. Retrieve other DAP files by repeating step 9. The DAPs retrieved will reside in ***DeliveryPathname*** on the local machine.
- 11 At the UNIX prompt type **cp /home/mac/TestPGE.tar**, then press the **Enter** key.
18. This step will copy the DAP tar file into their working directory.

### 26.3.1.2 Acquiring the DAP from the Archive after Ingest

The **insert** service is used to put the DAP into the Data Server after it is ingested. Once the DAP is in the Data Server, the **acquire** service is used to retrieve it.

DAP is acquired from Data Server and placed in the specified directory. Note there will be 2 files, the DAP itself (a big tar file) and the metadata associated with the DAP. The metadata may be helpful in the creating the SSAP.

When a DAP is inserted into the Data Server by Ingest, an email is sent to all users who subscribe to that event (Section 26.3.2).

### 26.3.1.3 Performing a DAP Acquire Using SSIT Manager

Generally, the preferred approach to accomplishing a DAP **acquire** will be through the use of the SSIT Manager GUI.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

- 1 The following servers/services are up and operational:  
**Data Server, Subscription Server, Storage management**
- 2 The following must have occurred between those Servers/Services:
- 3 Ingest must have ingested DAP and Inserted it into the Data Server. Subscription Server must have gotten notification from the Data Server of the Insert. Subscription Server must send email to the SSIT operator notifying him/her of DAP Insertion and giving him (in the email) the UR of the DAP.
- 4 The SSIT Manager is available
- 5 The X Window **DISPLAY** environment variable is pointing to your screen

### **DAP Acquire Procedures:**

---

- 1 If not already on an AIT Sun, log onto one from your current machine.
- 2 Bring up the SSIT Manager GUI. At the UNIX prompt, type **mgr** (if alias has been established)
- 3 After a short while, the SSIT Manager GUI will appear. From the SSIT Manager top menu bar, select **Tools -> Data Server -> Acquire DAP**  
See figure 26.2.3-1. If the SSIT Manager GUI is used to initiate the DAP processing, Step 4 can be skipped.
- 4 Alternately, one can initiate the DPA processing sequence from the command line. To do this
- 5 Type **source /usr/ecs/TS1/CUSTOM/bin/DPS/.buildrc <RETURN>**  
Note: This step only needs to be done once per login
- 6 Type **/usr/ecs/TS1/CUSTOM/bin/DPS/DpAtStageAlgorithmPackage.sh <RETURN>**
- 7 The user will be prompted with:  
  
    \*\* DAP Staging Tool \*\*  
    Configuration filename? (enter for default: DpAtAA.CFG)  
  
    To respond, type **<RETURN>**
- 8 The user will be prompted with:  
  
    ECS Mode of operations? (enter for default: OPS)

To respond, type **TS1 <RETURN>**

- 9 The user will be prompted with:

Name of email message file (including path)?

To respond, type the required file name plus the path, e.g.,  
**/home/diascone/emessage01.asc <RETURN>**

The user will be prompted with:

Directory to receive staged file?

To respond, type the required directory, e.g.,  
**/home/diascone/staged <RETURN>**

---

### 26.3.2 Unpacking a DAP

Once a DAP has been acquired via electronic means or physical media, it typically needs to be unpacked before its contents are accessible for SSI&T. Several mechanisms are available under standard UNIX for packing and unpacking files to and from a file archive, the most common being UNIX *tar*. Another fairly typical utility is *gzip* and its companion, *gunzip*.

The file name extension is usually an indication of the packing utility used and DAP files should use this convention. DAP files that have been packed using the UNIX *tar* utility will usually have *.tar* as a file name extension indicating a tar file. If the DAP has been further compressed using the UNIX *compress* utility, the file name extension is typically *.tar.Z* indicating a compressed tar file. For DAP files packed with the *gzip* utility, the *.zip* file name extension is generally used.

When unpacking is performed on a DAP, the contents of the packed file are moved from the tar archive to local disk. If the DAP tar file contains directories as well as files, these directories will be created in the same structure as in the tar file. This structure typically reflects the directory structure from which the tar file was created in the first place at the SCF. Once a tar file has been unpacked, the original tar file will still exist unaltered.

### Unpacking a DAP

---

- 1 Log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.
- 2 Enter the **password** then press the **Enter** key.
- 3 At a UNIX prompt, type **cd *UnpackPathname***, then press the **Enter** key.
- 4 The ***UnpackPathname*** is the path name of the directory that has been set aside for unpacking of DAPs.

- 5 This directory now contains the DAP tar file. For example, **cd /home/user**, where *user* is the user's login directory, then press the **Enter** key.
  - 6 If the tar file is compressed, at a UNIX prompt, type **uncompress PackedDAP.Z**, then press the **Enter** key.
  - 7 The **PackedDAP.Z** is the file name of the compressed DAP file.
    - The file name extension of **.Z** is a convention indicating UNIX compressed files. The **uncompress** utility expects this file name extension by default. A resulting error may indicate that the DAP file was not compressed or that another compression utility was used. If the file name extension was **.Z**, the uncompressed version will have the same file name but without the **.Z**, for example **PackedDAP**.
    - The tar file for the SSI&T Training will not be compressed.
  - 8 At the UNIX prompt, type **tar xvf PackedDAP**, then press the **Enter** key.
    - The **PackedDAP** is the file name of the uncompressed DAP file.
    - The tar archive will be unpacked in the current directory. If the archive contained directories and subdirectories, these will be created by the tar utility and populated by the files that belong.
- 

## 26.4 Science Software Configuration Management

The CM Administrator and System Administrator are key players in the SSI&T process. The CM Administrator receives the science software from the Science Data Specialist, places these files into a directory and request that the System Administrator place the files under configuration control by using the ClearCase tool. The science software is then tested by the SSI&T team and once the science software has successfully been tested, and upon direction from the CCB, the files are distributed to the Production Planner for placement on production server.

The CM and System Administrator need a good understanding of the ClearCase tool. ClearCase will be used to create a view, create a new directory, import files into the temporary subdirectories, and check-in and check-out files.

### 26.4.1 ClearCase Overview

All data managed under ClearCase are stored in Versioned Object Bases (VOBs), which are the “public” storage areas and Views, which are the “private storage areas. VOBs are data structures that can only be created by the CM administrator using the **mkvob** (“make vob”) command. A VOBs is mounted as a file system and when viewed through a view, it appears as a standard UNIX directory tree structure. This file system, accessed through its mount point, has a version-control dimension which contains file elements and versions of file elements. Once reviewed, the System Administrator will place these files under configuration control. In order to accomplish this task, a view must be created in ClearCase. A view is necessary in order to make visible and accessible files and directories that have been checked in to a VOB.

Data that are under configuration management in ClearCase are said to be “checked in”. In order to alter a checked-in data element (e.g. a file) to make a newer version of it, the data element

must first be “checked out”. Once the change has been made to the checked- out version, it is checked in again. The VOB will then contain both versions of the data element and either can be retrieved at a later date.

In general, executable binary files, object files, and data files should not be checked into ClearCase. Binary and object files are not stored efficiently in ClearCase; data files for software may be extremely large and a VOB is typically not sized for this.

Files that should be checked into ClearCase include source code, scripts, makefiles, assorted build and run scripts, documentation and other ASCII files.

A Versioned Object Base is defined by the following characteristics:

- A mountable file system which stores version-controlled data, such as source files, binary files, object libraries, WYSIWYG documents, spreadsheets and anything which can be stored in the UNIX file system.

- Can be mounted on some or all workstations

- Several VOBs may exist on a machine or on different machines on a network.

- When mounted as a file system of type MFS, a VOB can be accessed with standard UNIX and ClearCase tools.

- The ClearCase file system is transparent.

- Created by the CM administrator

A VOB is comprised of:

- Storage area for versioned files, derived objects and cleartext files.

- Database (live, shadow and log file).

### **26.4.2 Creating a View in ClearCase**

In order to make files and directories that are in a ClearCase VOB visible and accessible a ClearCase view must set. A ClearCase view need only be created once. Once created, the view can be set at the beginning of each user session. Multiple views for a single user may be created.

In order for the SSI&T tools under the SSIT Manager to have access to the ClearCase VOB, the ClearCase view must be set before the SSIT Manager is run.

A view is defined by the following characteristics:

- A working context for an individual developer or closely coordinated group.

- Can be used to access any VOB or multiple VOBs.

- Selects versions of VOB directories and files to display.

- Allows developer to work without interfering with other developers.

- Not a set of files but a way of seeing shared elements.

- Each user may have multiple views for new development, bug fixing or porting activities.

A view is comprised of:

- View storage area (typically in a local machine) - private storage for checked-out files, derived objects and private files.

Configuration Specification - set of rules which determine the version of a file the view will see.

View-tag - Name given to the view (ex. `angies_view`), view-tags are registered in `/urs/adm/atria/view_tags`.

Objects stored in a view:

Checked-out versions of file elements.

Unshared derived objects.

The ClearCase procedures can either be run from the UNIX command line or from the File Browser Screen. The SSI&T Training will only cover the UNIX command line procedures. The corresponding GUI procedures are included in the Training Material for future reference.

The following procedure not only will create a view, but will also allow creation of a subdirectory where new science software files may be stored.

Assumptions:

1. ClearCase is available.
2. A Versioned Object Base (VOB) has been created

#### 26.4.2.1 Creating a View in ClearCase Using Command Lines

- 1 Log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.
- 2 Enter the **password** then press the **Enter** key.
- 3 At a UNIX prompt type **cleartool lsview**, then press the **Enter** key.  
19. The **lsview** command displays the pathname to the storage location of the views.
- 4 At a UNIX prompt type **cleartool mkview -tag *ViewName* *ViewPath/ViewName.vws***, then press the **Enter** key.

The ***ViewPath*** is the full path to the directory where views are stored.

The ***ViewName*** is the user selected name for the view. The file name for the view must end in ***“.vws”***.

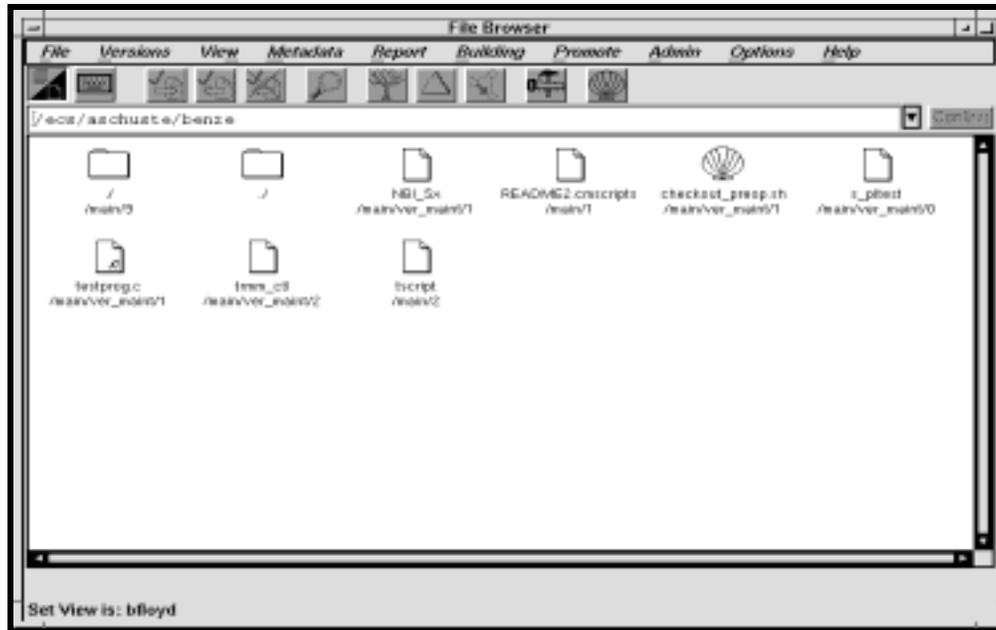
For future reference, the corresponding ClearCase GUI procedures are included in the following section.

#### 26.4.2.2 Creating a View in ClearCase using the File Browser Screen

Selecting a view listed in the View Tag Browser screen brings up the File Browser, or main screen, shown in Figure 26.4.2-1.

Displays the directory name of the current VOB, just below the toolbar.

Displays the content of the directory in the space below the directory's name.



**Figure 26.4.2-1. ClearCase File Browser Screen (Main Screen)**

## Procedures

- 1 The user should log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.  
Cursor moves to the **Password** field.
- 2 Type the **password** then press the **Enter** key.
- 3 Invoke ClearCase by typing **xclearcase &** on the UNIX command line then press the **Enter** key.
  - The ClearCase **Transcript** screen is displayed as the View Tag Browser loads.
  - The ClearCase **View Tag Browser** screen is displayed listing available views.
- 4 To create a view for checking in the software change package, select a known View and press the **Enter** key.
  - The File Browser window is displayed.
- 5 Select **File**→**Execute**→**Single Command**.
  - The String Browser window is displayed.
 The prompt Enter shell command to run is displayed.
- 6 Invoke the make view command by typing **mkview [filename]** on the UNIX command line and press the **Enter** key.
  - The **tempdisp** window appears.
  - The **View [filename] Created Successfully** and the **Cache Updated for View [filename]** prompts are displayed.
- 7 Close the **tempdisp** window by clicking on the window and press the **Enter** key.
  - The **tempdisp** window closes.
- 8 Select **View** →**List** from the menu.
  - The **View Tag Browser** is displayed.
- 9 Find the new view by scrolling through the list until the new view is observed.

### 26.4.3 Setting a View in ClearCase

In order to make files and directories that are in a ClearCase VOB visible and accessible, a ClearCase view must be set. Only one view can be set (active) at a time.

#### 26.4.3.1 Setting a View in ClearCase Using Command Lines

- 1 Log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.
  - 2 At a UNIX prompt type **cleartool setview *ViewName*** where *ViewName* is the user's view created in the previous section, then press the **Enter** key.
- 

#### 26.4.3.2 Setting a View Using the File Browser Screen in ClearCase

- 1 Log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.  
Cursor moves to the **Password** field.
  - 2 Type the **password** then press the **Enter** key.
  - 3 Invoke ClearCase by typing **xclearcase &** on the UNIX command line then press the **Enter** key.  
The ClearCase **Transcript** screen is displayed as the View Tag Browser loads.  
The ClearCase **View Tag Browser** screen is displayed listing available views.
  - 4 To set a view, select a known View and press the **Enter** key.  
The File Browser window is displayed.
  - 5 Select **File→Execute→Single Command**.  
The String Browser window is displayed.  
The prompt **Enter** shell command to run is displayed.
  - 6 Invoke the set view command by typing **setview *ViewName*** on the UNIX command line and press the **Enter** key.  
**ViewName** is the name of the view to set.
- 

### 26.4.4 Creating a New Directory

In cases where a new directory needs to be created and placed in ClearCase, the user will activate ClearCase and create a new directory. This type of procedure is necessary only if a new directory is required.

The following is a list of tools, and or assumptions:

1. A VOB has been created at the UNIX directory.
  2. A view has been created.
- **Creating a New Directory in ClearCase Using Command Lines**

- 1 Log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.
  - 2 Enter the **password** then press the **Enter** key.
  - 3 At a UNIX prompt type **cleartool setview *ViewName***, then press the **Enter** key.  
The *ViewName* is the user's view.
  - 4 At a UNIX prompt type **cleartool lsvo**, then press the **Enter** key.  
This command lists all the VOBs and allows the identification of the SSI&T VOB.
  - 5 At a UNIX prompt type **cd *pathname***, then press the **Enter** key.  
The *pathname* is the full path name of the parent directory in the VOB in which the new directory is to be added.
  - 6 At a UNIX prompt type **cleartool checkout -nc .** then press the **Enter** key.  
This command checks out the current directory. Note the dot for the directory.  
The **-nc** is a keyword used when no comments are to be made for this action.
  - 7 At a UNIX prompt type **cleartool mkdir -nc *dirname***, then press the **Enter** key.  
The *dirname* is the name of the new directory being created.
  - 8 At a UNIX prompt type **cleartool checkin -nc *dirname***, then press the **Enter** key.  
This command checks in the new directory named *dirname*.
  - 9 At a UNIX prompt type **cleartool checkin -nc .** then press the **Enter** key.  
This command checks in the current directory.
- 

#### **26.4.4.2 Entering a New Directory Using the File Screen Browser into ClearCase**

---

- 1 Log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.  
Cursor moves to the **Password** field.
- 2 Type the **password** then press the **Enter** key.
- 3 Invoke ClearCase by typing **xclearcase &** on the UNIX command line then press the **Enter** key.
  - The ClearCase **Transcript** screen is displayed as the View Tag Browser loads.
  - The ClearCase **View Tag Browser** screen is displayed listing available views.
- 4 Select **File→Execute→Single Command**.  
The String Browser window is displayed.  
The prompt **Enter shell command to run** is displayed.

- 5 Invoke the make directory element by typing **mkdir [filename]** on the UNIX command line and press the **Enter** key.
  - 6 Invoke the make element command by typing **mkelem [directory name]** on the UNIX command line and press the **Enter** key.
  - 7 Type into the directory input box of the **File Browser** the name of the directory in the VOB to be checked out, press the **Enter** key, then follow the menu path **Version→Checkout→Reserved: no comment**.
    - In order to add new files to ClearCase, the directory in which the files are to be added must be checked out first.
    - ClearCase forces the checkout onto a maintenance branch to isolate the maintenance activity.
    - If someone else has already checked out the directory, permission to check out the directory is denied. A separate shell window is displayed.
  - 8 Cancel the checkout of the element if it is decided that no changes are to be made by typing into the directory input box of the **File Browser** the name of the directory to be checked in, press the **Enter** key, then follow the menu path **Version→Uncheckout→Unreserved: no comment**.
  - 9 On the **File Browser** screen, follow the menu path **File→Exit**.  
The ClearCase Graphical User Interface session is closed.
- 

### 26.4.5 Importing files into ClearCase

Once the user has created a directory to place the science software files, ClearCase can be used to place a single file or multiple files in a UNIX directory structure under CM.

The following is a list of tools, and or assumptions:

1. A VOB and subdirectory are created to hold these files.
2. No object files or executables exist in the source code directory.
3. The PGE was received with a directory structure that contains various types of files.
4. These files will be entered into ClearCase and will maintain the same directory structure as the delivery structure.

#### 26.4.5.1 Importing a Single File into ClearCase

##### Procedure:

---

- 1 Log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.  
Cursor moves to the **Password** field.
- 2 Type the **password** then press the **Enter** key.
- 3 At a UNIX prompt, type **cleartool setview ViewName**, press **Enter**  
The **ViewName** is the name of the ClearCase View.
- 4 At the UNIX prompt, type **cd pathname**, then press the **Enter** key.

The *pathname* is the full path name of the subdirectory in the VOB into which the file is to be checked in.

If the desired directory cannot be seen, it could mean that the view has not been set or the properties of the view do not allow the directory to be seen; check with the CM Administrator.

- 5 At a UNIX prompt, type **cp *pathname/filename* .**, press **Enter** (note the space and then “dot” at the end of the command).

The *pathname* is the full path name to the directory where the file to be checked in exists and *filename* is the file name of the file to be checked in.

This command copies a file over into the VOB area in preparation for checking it in.

- 6 At the UNIX prompt, type **cleartool checkout -nc .**, press **Enter** (note the space and then “dot” at the end of the command).

This command checks out the current directory (represented by the “dot”) from ClearCase.

Adding a new file (or element) to a directory represents a modification of the directory.

Hence, the directory must be checked out before a file can be checked in.

- 7 At a UNIX prompt, type **cleartool mkelem -nc *filename***, then press the **Enter** key.

The *filename* is the name of the file that was copied over in step 5 and is the file that will be checked into ClearCase.

This command creates a ClearCase element from the file in preparation for checking it in.

The **-nc** flag means “no comment”; it suppresses ClearCase from prompting for a comment to be associated with the make element step.

- 8 At the UNIX prompt, type **cleartool checkin -nc *filename***, then press the **Enter** key.

The *filename* is the name of the file to be checked into ClearCase.

This command performs the check in of the file.

The **-nc** flag means “no comment”; it suppresses ClearCase from prompting for a comment to be associated with the checkin step.

- 9 At the UNIX prompt, type **cleartool checkin -nc .**, press **Enter** (note the space and then “dot” at the end of the command).

This command checks in the current directory (represented by the “dot”) into ClearCase.

The adding of an element (here, a file) represents a modification to the directory and hence, the new version of the directory must be checked back in.

The **-nc** flag means “no comment”; it suppresses ClearCase from prompting for a comment to be associated with the checkin step.

---

### 26.4.5.2 Importing Multiple Files into ClearCase

The DAP for the synthetic PGE contains only one source code module and a minimal number of other files. A real PGE will generally contain many source files, header files, and multiple other types of files stored in a standard type of directory structure which is retained when the PGE is packed into the tar file. The script provided by ClearCase is used for the purpose of making another load script to enter all of the DAP files along with the directory structure at one time. The final step of running the load script can only be performed by the DAAC Administrator.

The following procedure explains how to place the entire contents of a UNIX directory structure under ClearCase. A UNIX directory structure refers to all the files and subdirectories under some top-level directory.

This procedure is geared toward science software deliveries. In such cases, science software is delivered in the form of a UNIX *tar* files. A *tar* file has been unpacked (*untar*-red) and the contents are to be placed under ClearCase configuration management.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

The following is a list of tools, and or assumptions:

1. A VOB and subdirectory are created to hold these files.
2. A ClearCase view is **not** required to perform this procedure.

### Importing Multiple Files Into ClearCase

---

- 1** At a UNIX prompt, type **cd *ParentPathname***, then press the **Enter** key  
The *ParentPathname* is the path name of the directory that *contains* the directory structure to be brought into ClearCase. This is *not* the VOB.
- 2** At the UNIX prompt, type **clearcvt\_unix -r *DirName***, then press the **Enter** key.  
The *DirName* is the name of the directory in which it and everything below it is to be brought into ClearCase.  
A conversion script will be then be created. The -r causes all subdirectories to be recursively included in the script created.
- 3** Contact the VOB Administrator and request that the utility script *cvt\_script* be run on the script created in step 2.  
The VOB Administrator is the only one who can run the *cvt\_script* because it modifies the VOB.
- 4** At this time the user logs out from this workstation. The VOB Administrator completes the procedure.  
The remaining steps are accomplished by the VOB Administrator.
- 5** The VOB Administrator logs into the AIT Sun workstation by typing **username** then press the **Enter** key.  
Cursor moves to the **Password** field.
- 6** Type the **password** then press the **Enter** key.
- 7** Invoke ClearCase by typing **xclearcase &** on the UNIX command line then press the **Enter** key.  
The ClearCase **Transcript** screen is displayed as the View Tag Browser loads.  
The ClearCase **View Tag Browser** screen is displayed listing available views.
- 8** To create a view for checking in the software change package, select a known View and press the **Enter** key. If you are using an existing view, select the desired existing view and proceed to step 14.

- The File Browser window is displayed.
- 9 Select **File**→**Execute**→**Single Command**.
- The String Browser window is displayed.
- The prompt Enter shell command to run is displayed.
- 10 Invoke the make view command by typing **mkview [filename]** on the UNIX command line and press the **Enter** key.
- The **tempdisp** window appears.
- The **View [filename] Created Successfully** and the **Cache Updated for View [filename]** prompts are displayed.
- 11 Close the **tempdisp** window by clicking on the window and press the **Enter** key.
- The **tempdisp** window closes.
- 12 Select the VOB where the software change package is to be imported then press the **Enter** key.
- 13 To create a subdirectory for the software change package in that VOB, which is a modification to the parent directory (for the VOB) the parent directory must be checked out by following the menu path **Version**→**Checkout**→**Reserved: no comment**.
- In order to add new files to ClearCase, the directory in which the files are to be added must be checked out first.
- ClearCase forces the checkout onto a maintenance branch to isolate the maintenance activity.
- If someone else has already checked out the directory, permission to check out the directory is denied.
- A separate shell window is displayed.
- 14 Start a shell process in a separate window by clicking on the shell icon button of the **File Browser** toolbar.
- A separate shell window is displayed.
- 15 To run the script, type **cvt\_script** then press the **Enter** key.
- The VOB Administrator is the only person who can run the **cvt\_script** because it modifies the VOB.
- 16 To check in the new directory, type into the directory input box of the **File Browser** screen: **path** [where **path** is the full path identification for the new directory (**directoryname**)], then press the **Enter** key. Then select **Versions**→**Checkin** from the menu.
- 17 To check in the parent directory (for the VOB), type into the directory input box of the **File Browser** screen: **VOBpath** (where **VOBpath** is the full path identification for the parent directory), then press the **Enter** key. Then select **Versions**→**Checkin** from the menu.
- 18 On the **File Browser** screen, follow menu path **File**→**Exit**.
- The ClearCase Graphical User Interface session is closed.

---

## 26.4.6 Checking Out a File From ClearCase

If a configured file requires modification, then the file needs to be checked out of the configured directory and placed in a user directory. This will allow the file(s) to be modified.

The following is a list of tools, and or assumptions:

1. The file or directory must be an element created in ClearCase.
2. The view should be configured to ensure the correct version of the file or directory is seen.

### Checking Out an Element/File from the Command Line

---

- 1 Log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.
  - 2 Enter the **password** then press the **Enter** key.
  - 3 At a UNIX prompt type **cleartool setview *ViewName***, then press the **Enter** key.  
The *ViewName* is the name of the user's view.
  - 4 At a UNIX prompt type **cleartool checkout -nc *element*** then press the **Enter** key.  
20. The *element* is the name of the file or directory that is to be checked out.  
21. The **-nc** flag means "no comment" which will suppress the ClearCase prompting for a comment to be associated with the check out step.
- 

### Checking Out an Element/File from the File Screen Browser

---

- 1 Log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.  
Cursor moves to the **Password** field.
- 2 Type the **password** then press the **Enter** key.
- 3 Invoke ClearCase GUI by typing **xclearcase &** on the UNIX command line then press the **Enter** key.  
The ClearCase **Transcript** screen is displayed as the View Tag Browser loads.  
The ClearCase **View Tag Browser** screen is displayed listing available views.
- 4 To check out the directory where the controlled files were placed, type into the directory input box of the **File Browser** screen: **path** [where **path** is the full path identification for the directory (**directoryname**)], then press the **Enter** key. Then select **Versions**→**Checkout** from the menu.
- 5 Select **File**→**Execute**→**Single Command**.  
The String Browser window is displayed.  
The prompt **Enter shell command to run** is displayed.
- 6 To determine editing privileges, type **ls -l**, then press the **Enter** key.  
A prompt displaying read/write/execute privileges will be displayed. There will be three groupings:
  - **User Group Others**

- **r=read, w=write, x=execute**
- 7 If you have editing/execute privileges, you can revise the contents of the file with any text editor.
  - 8 To checkin a controlled file, select **Versions**→**Checkin** from the menu.  
The file/directory will be checked in to ClearCase and the version will be updated.
- 

### 26.4.7 Checking a Modified Element into ClearCase

This procedure explains how to check in a modified element to ClearCase. An element refers to a directory or file in ClearCase, that is, under configuration management. Modifications made to a file or directory cannot be saved in ClearCase unless the file or directory had been checked out first.

The following is a list of tools, and or assumptions:

1. A VOB exists and is mounted at a known UNIX directory.
2. A ClearCase view exists for the SSI&T operator.
3. The element or file has been checked out and modified.
4. The modified file is now in the user's directory on the VOB from which it was checked out.

#### 26.4.7.1 Checking a Modified Element/File into ClearCase

---

- 1 Log into one of the AIT Sun workstations by typing: **username** then press the **Enter** key.  
Cursor moves to the **Password** field.
  - 2 Type the **password** then press the **Enter** key.
  - 3 At a UNIX prompt, type **cleartool setview *ViewName***, then press the **Enter** key.  
The ***ViewName*** is the name of the user's view.
  - 4 At the UNIX prompt, type **cleartool checkin -nc *filename***, then press the **Enter** key.  
The ***filename*** is the name of the file (full path name allowed) that is to be checked out (and later modified).  
The **-nc** flag means "no comment"; it suppresses ClearCase from prompting for a comment to be associated with the check out step.  
This command checks in the current directory.
  - 5 This step is optional; it is performed when ClearCase does not accept a checkin because the element was not modified. In this case, the check out must be canceled. At a UNIX prompt, type **cleartool uncheckout -nc *filename***, then press the **Enter** key.  
The ***filename*** is the name of the file or directory (full path name allowed) checked out.  
This command cancels the check out of an element/file.
-

## 26.5 Standards Checking of Science Software

The purpose of standards checking is to verify that the source files of the science software are compliant with the ESDIS Data Production Software Computing Facility (SCF) Standards and Guidelines document.

### 26.5.1 Checking FORTRAN 77 ESDIS Standards Compliance

The ESDIS Data Production Software Computing Facility (SCF) Standards and Guidelines document requires all FORTRAN 77 code to be compliant with the ANSI FORTRAN 77. The COTS used for this task is FORCHECK.

The following is a list of tools, and or assumptions:

Assumptions:

1. The FORTRAN 77 science software source code is available, accessible, and has read permissions for the user.
2. SSIT Manager is available for use.

FORCHECK is available only on the AIT Suns.

**To check for ESDIS standards compliance in FORTRAN 77 code, execute the procedure steps that follow:**

- 
- 1 If not already on an AIT Sun, log into one from your machine.
    22. Once logged onto proper Sun, remember to set the DISPLAY environmental variable to point to your X Window screen.
  - 2 If required, at the UNIX prompt on the AIT Sun, type **cleartool setview *ViewName***, press **Return**.
    23. The *ViewName* is the name of a view allowing the FORTRAN 77 source files to be accessible.
    24. This step is only necessary if any of the FORTRAN 77 source files are in ClearCase (in the VOB under configuration management).
  - 3 If your general environment setup does not include transparent access to the SSIT Manager GUI, then you need to set that up. One way to do it is as follows:
    25. Set up an alias, manually or from shell script, to set up preliminary environment. At UNIX prompt, type **alias do\_buildrc "/usr/ecs/TS1/CUSTOM/bin/DPS/.buildrc"**
    26. Set up an alias, manually or through shell script, to invoke SSIT Manager. At UNIX prompt, type **alias do\_ssit\_man "/usr/ecs/TS1/CUSTOM/bin/DPS/EcDpAtMgr ConfigFile /usr/ecs/TS1/CUSTOM/cfg/EcDpAtMG.CFG ecs\_mode TS1& "**
  - 4 Set up the preliminary environment (do\_buildrc). This only needs to be done once per session. Then, run SSIT Manager (do\_ssit\_man).

- 27. Type **do\_buildrc**
  - 28. Type **do\_ssit\_man**
- 5** Once the SSIT Manager comes up, the following steps need to be taken to invoke FORCHECK
- 29. From the top menu bar, select **Tools**.
  - 30. From the Tools menu, select **Standards Checkers**.
  - 31. From the Standards Checkers menu, select **FORCHECK**.
  - 32. See Figure 26.8.5-2. for a screen snapshot of this step.
- 6** A separate FORCHECK window will now open.
- 33. The user will be prompted for input. The first prompt will be *global option(s) and list file?*
  - 34. The second prompt will be *local option(s) and file(s)?*
  - 35. The second prompt will be repeated until there is a blank line and carriage return.
  - 36. In order to understand what the proper responses should be, the user is encouraged to find hardcopy documentation for FORCHECK or to use the UNIX man facility and type *man forchk* .
- 7** At the UNIX prompt on the AIT Sun, type **vi FORCHECKoutput**, press **Return**.
- 37. The **FORCHECKoutput** is the file name for the output file produced in step 6.
  - 38. The **FORCHECKoutput** file will contain any warnings, errors, and other messages from FORCHECK. A summary will be at the bottom of the file.
  - 39. Any text editor may be used for this procedure step.
- 8** At the UNIX prompt on the AIT Sun, type **vi ListFile**, press **Return**.
- 40. The **ListFile** is the file name for the list file specified at the FORCHECK prompt.
  - 41. The **ListFile** file will contain FORCHECK messages similar to the **FORCHECKoutput** file embedded in the source code listing.
- Any text editor may be used for this procedure step.
- 

## 26.5.2 Checking for ESDIS Standards Compliance in Fortran 90

This procedure describes how to use the Fortran 90 compiler flags on the SPR SGI machines to check science software written in Fortran 90 for ESDIS standards compliance.

Unlike with FORTRAN 77, no COTS tool is used to check Fortran 90 science software. Instead, this procedure describes how to use the compiler to perform the checking (ESDIS standards for Fortran 90 are ANSI). Since the Fortran 90 compiler is used, the checking for standards compliance can be naturally tied in with building the science software (since this procedure will produce object files suitable for linking). However, in this procedure, the building of the software (compiling *and* linking) is deferred to a later procedure.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The Fortran 90 science software source code is available, accessible, and has read permissions for the user.
2. Required Status Message Facility (SMF) files have been compiled.
3. The C shell (or a derivative) is the current command shell.
4. The Fortran 90 compiler is available on the SPR SGI.

**To check for ESDIS standards compliance in Fortran 90 code, execute the procedure steps that follow:**

---

- 1 From the SSIT Manager, click on the **T**ools menu, then choose **X**term. Then telnet to the SPR SGI.
  - Alternatively, in any currently available xterm window, spawn a new session: type **xterm &**, press **Return**. Then telnet to the SPR SGI.
- 2 At the UNIX prompt on the SPR SGI, set up the proper environment for the compiler to be used by typing **source ToolkitPathname /bin/sgiXX/pgs-dev-env.csh .**
  - **ToolkitPathname** is the home directory of the desired SDP Toolkit version .
  - The directory **sgiXX** should be replaced with **sgi32** or **sgi64** as appropriate for the specific compiler desired.
  - For example, on the mini-DAAC platform p0spg01, type **source /data3/ecs/TS1/CUSTOM/daac\_toolkit\_f90/TOOLKIT/bin/sgi64/pgs-dev-env.csh .** This will set up the various environment parameters, such as PGSHOME, to enable the 64 bit version of the FORTRAN 90 compiler to be run.
- 3 If required, at the UNIX prompt on the SPR SGI, type **cleartool setview ViewName**, press **Return**.
  - The **ViewName** is the name of a view allowing the Fortran 90 source files to be accessible.
  - This step is only necessary if any of the Fortran 90 source files are in ClearCase (in the VOB under configuration management).
- 4 At the UNIX prompt on the SPR SGI, type **cd SrcPathname**, press **Return**.
  - The **SrcPathname** is the full path name to the location of the Fortran 90 source files to be checked.
  - The **SrcPathname** will be in the ClearCase VOB if the Fortran 90 source files are checked into ClearCase.
- 5 At the UNIX prompt on the SPR SGI, type **f90 -c -ansi [-I\$PGSINC] [-I\$HDFINC] [[-IOtherIncFiles]...] SourceFiles >& ReportFile**, press **Return**.
  - The terms in square brackets (*[ ]*) are used to optionally specify locations of include and module (.mod) files. The **\$PGSINC** already contains the SDP Toolkit include directory and **\$HDFINC** already contains the HDF include directory. The **OtherIncFiles** represents one or more additional include or module directories.

- The *SourceFiles* is a list (space delimited) of Fortran 90 source files or a wildcard template (e.g. \*.f90).
  - The **>&** is a C shell construct that causes standard error (where the output from the Fortran 90 compiler normally emerges) to be redirected to a file.
  - The *ReportFile* is the file name under which to save the results of the compile process.
  - The **-c** flag causes only compilation (no linking).
  - The **-ansi** flag enables ANSI checking.
  - Apply the terms in square brackets only as necessary. Do not include the brackets in the actual command. See example below.
  - Do not use the **-I** option for include or module files that are in the standard directories or in the current directory.
  - The makefile for the science software may contain the names of additional include files needed by the software.
  - For example, type **f90 -c -I\$PGSINC -I\$HDFINC -I/ecs/modis/pge5/include/\*.f90 >& pge10.report**, press **Return**.
- 6** At the UNIX prompt on the SPR SGI, type **vi ReportFile**, press **Return**.
- The *ReportFile* is the file name for the compilation results as produced in step 5.
  - Any text editor may be used for this procedure step.
- 

### 26.5.3 Checking for ESDIS Standards Compliance in C

This procedure describes how to use the C compiler flags on the SPR SGI machines to check science software written in C for ESDIS standards compliance.

Unlike with FORTRAN 77, no COTS tool is used to check C science software. Instead, this procedure describes how to use the compiler to perform the checking (ESDIS standards for C are essentially ANSI). Since the C compiler is used, the checking for standards compliance can be naturally tied in with building the science software (since this procedure will produce object files suitable for linking). However, in this procedure, the building of the software (compiling *and* linking) is deferred to a later procedure.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The C science software source code is available, accessible, and has read permissions for the user.
  2. Required Status Message Facility (SMF) files have been compiled.
  3. The C shell (or a derivative) is the current command shell.
- The C compiler is available on the SPR SGI.

To check for ESDIS standards compliance in C code, execute the procedure steps that follow:

---

- 1 From the SSIT Manager, click on the **T**ools menu, then choose **X**term. Then telnet to the SPR SGI.  
Alternatively, in any currently available xterm window, spawn a new session: type **xterm &**, press **Return**. Then telnet to the SPR SGI.
- 2 At the UNIX prompt on the SPR SGI, type **setenv PGSHOME ToolkitPathname**, press **Return**. Then type, source **\$PGSHOME/bin/sgiX/pgs-dev-env.csh**, press **Return**.  
The *ToolkitPathname* is the home directory of the desired SDP Toolkit version.  
The *sgiX* refers to the appropriate processor. For example, type **source \$PGSHOME/bin/sgi/pgs-dev-env.csh**, press **Return**.
- 3 If required, at the UNIX prompt on the SPR SGI, type **cleartool setview ViewName**, press **Return**.  
The *ViewName* is the name of a view allowing the C source files to be accessible.  
This step is only necessary if any of the C source files are in ClearCase (in the VOB under configuration management).
- 4 At the UNIX prompt on the SPR SGI, type **cd SrcPathname**, press **Return**.  
The *SrcPathname* is the full path name to the location of the C source files to be checked.  
The *SrcPathname* will be in the ClearCase VOB is the C source files are checked into ClearCase.
- 5 At the UNIX prompt on the SPR SGI, type **cc -c -ansi [-I\$PGSINC] [-I\$HDFINC] [[-IOtherIncFiles]...] SourceFiles >& ReportFile**, press **Return**.  
The terms in square brackets (*[ ]*) are used to optionally specify locations of include and module (.mod) files. The *\$PGSINC* already contains the SDP Toolkit include directory and *\$HDFINC* already contains the HDF include directory. The **OtherIncFiles** represents one or more additional include directories.  
The *SourceFiles* is a list (space delimited) of C source files or a wildcard template (*e.g.* \*.c).  
The **>&** is a C shell construct that causes standard error (where the output from the C compiler normally emerges) to be redirected to a file.  
The *ReportFile* is the file name under which to save the results of the compile process.  
The **-c** flag causes only compilation (no linking).  
The **-ansi** flag enables ANSI checking.  
Apply the terms in square brackets only as necessary. Do not include the brackets in the actual command. See example below.  
Do not use the **-I** option for include files that are in the standard directories (*e.g.* /usr/include) or in the current directory.  
The makefile for the science software may contain the names of additional include files needed by the software.  
For example, type **cc -c -ansi -I\$PGSINC -I\$HDFINC -Iecs/modis/pgs5/include/ \*.c >& pgs10.report**, press **Return**.
- 6 At the UNIX prompt on the SPR SGI, type **vi ReportFile**, press **Return**.  
The *ReportFile* is the file name for the compilation results as produced in step 5.

Any text editor may be used for this procedure step.

---

## 26.5.4 Checking for ESDIS Standards Compliance in Ada

This procedure describes how to use Ada compilers on the SPR SGI machines to check science software written in Ada for ESDIS standards compliance.

Unlike with FORTRAN 77, Fortran 90, or C, Ada compilers are subjected to a validation process by the DoD Ada Committee. Thus, any code that compiles successfully by a validated compiler is, by definition, fully ANSI compliant. Since the Ada compiler is used, the checking for standards compliance can be naturally tied in with building the science software (since this procedure will produce object files suitable for linking). However, in this procedure, the building of the software (compiling *and* linking) is deferred to a later procedure.

### 26.5.4.1 Checking for ESDIS Standards Compliance in Ada: Verdex COTS

This procedure describes compiling Ada software using the COTS Verdex Ada Development System (VADS) which provides a complete environment for building (and developing) Ada software. See the *gcc* compiler in compiling Ada code.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The Ada science software source code is available, accessible, and has read permissions for the user.
2. The C shell (or a derivative) is the current command shell.
- The Ada compiler is available on the SPR SGI.

**To check for ESDIS standards compliance in Ada code, execute the procedure steps that follow:**

---

- 1 From the SSIT Manager, click on the **T**ools menu, then choose **X**term. Then telnet to the SPR SGI.
  - Alternatively, in any currently available xterm window, spawn a new session: type **xterm &**, press **R**eturn. Then telnet to the SPR SGI.
- 2 If required, at the UNIX prompt on the SPR SGI, type **cleartool setview ViewName**, press **R**eturn.
  - The **ViewName** is the name of a view allowing the Ada source files to be accessible.
  - This step is only necessary if any of the Ada source files are in ClearCase (in the VOB under configuration management).

- 3 At the UNIX prompt on the SPR SGI, type **setenv SGI\_ABI -32**, press **Return**.
  - This command sets the environment variable **SGI\_ABI** for 32-bit mode compilation.
- 4 At the UNIX prompt on the SPR SGI, type **cd SrcPathname**, press **Return**.
  - The **SrcPathname** is the full path name to the location of the Ada source files to be checked.
  - The **SrcPathname** will be in the ClearCase VOB if the Ada source files are checked into ClearCase.
- 5 At the UNIX prompt on the SPR SGI, type **a.mklib**, press **Return**.
  - This command creates a VADS library directory. All Ada compilation must occur in a VADS Ada library.
- 6 At the UNIX prompt on the SPR SGI, type **a.make -v -f SourceFiles >& ReportFile**, press **Return**.
  - The **SourceFiles** is a list (space delimited) of Ada source files or a wildcard template (*e.g.* \*.ada).
  - The **>&** is a C shell construct that causes standard error (where the output from the Ada compiler normally emerges) to be redirected to a file.
  - The **ReportFile** is the file name under which to save the results of the compile process.
  - The **-v** flag enables verbose output.
  - The **-f** flag indicates that what immediately follows are the source files. The order of the flags is therefore important.
- 7 At the UNIX prompt on the AIT Sun, type **vi ReportFile**, press **Return**.
  - The **ReportFile** is the file name for the compilation results as produced in step 6.
  - Any text editor may be used for this procedure step.

#### 26.5.4.2 Checking for ESDIS Standards Compliance in Ada: GNU *gcc* Compiler

This procedure describes compiling Ada software using the GNU C compiler, *gcc*.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The Ada science software source code is available, accessible, and has read permissions for the user.
2. The C shell (or a derivative) is the current command shell.

The GNU *gcc* compiler is available on the SPR SGI.

To check for ESDIS standards compliance in Ada code, execute the procedure steps that follow:

---

- 1 From the SSIT Manager, click on the **T**ools menu, then choose **X**term. Then telnet to the SPR SGI.
    - Alternatively, in any currently available xterm window, spawn a new session: type **xterm &**, press **Return**. Then telnet to the SPR SGI.
    - It is recommended that this procedure begin within a new command shell on the SPR SGI.
  - 2 If required, at the UNIX prompt on the SPR SGI, type **cleartool setview *ViewName***, press **Return**.
    - The *ViewName* is the name of a view allowing the Ada source files to be accessible.
    - This step is only necessary if any of the Ada source files are in ClearCase (in the VOB under configuration management).
  - 3 At the UNIX prompt on the SPR SGI, type **setenv SGI\_ABI -32**, press **Return**.
    - This command sets the environment variable **SGI\_ABI** for 32-bit mode compilation.
  - 4 At the UNIX prompt on the SPR SGI, type **cd *SrcPathname***, press **Return**.
    - The *SrcPathname* is the full path name to the location of the Ada source files to be checked.
    - The *SrcPathname* will be in the ClearCase VOB if the Ada source files are checked into ClearCase.
  - 5 At the UNIX prompt on the SPR SGI, type **gcc -c -gnat83 *SourceFiles* >& *ReportFile***, press **Return**.
    - The *SourceFiles* is a list (space delimited) of Ada source files or a wildcard template (e.g. \*.ada).
    - The **>&** is a C shell construct that causes standard error (where the output from the *gcc* compiler normally emerges) to be redirected to a file.
    - The *ReportFile* is the file name under which to save the results of the compile process.
    - The **-c** flag causes only compilation (no linking).
    - The **-gnat83** enables compilation of Ada using the 1983 Ada Standard. Note that without this flag, the compiler would assume the 1995 Ada proposed Standard.
  - 6 At the UNIX prompt on the SPR SGI, type **vi *ReportFile***, press **Return**.
    - The *ReportFile* is the file name for the compilation results as produced in step 5.
    - Any text editor may be used for this procedure step
- 

## 26.5.5 Prohibited Function Checker

The use of certain functions in the PGE is prohibited. The Prohibited Function Checker (Figure 26.5.4-1) is used to check C, FORTRAN 77, FORTRAN 90, and Ada language source files for the occurrence of functions that are prohibited in the ECS DAAC production environment.

### 26.5.5.1 Checking for Prohibited Functions: Command-Line Version

This procedure describes using the command-line version of the Prohibited Function Checker to check science software for the prohibited functions.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

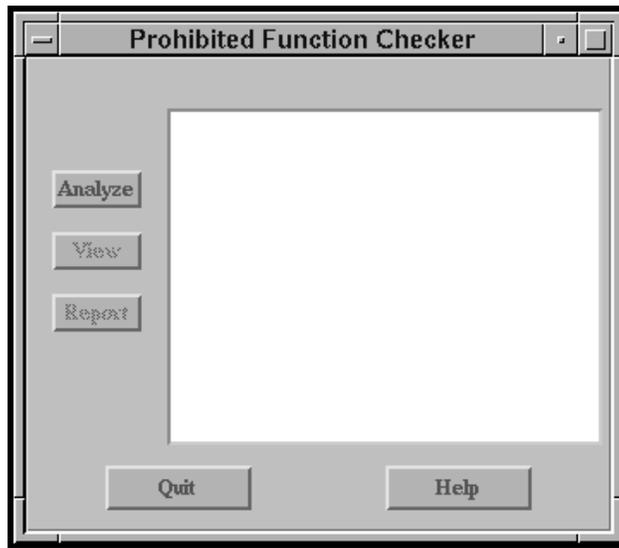
Assumptions:

1. The source files to be checked are available, accessible, and have read permissions for the operator.
2. Source files to be checked are Ada, C, FORTRAN 77, Fortran 90, C shell, Korn shell, Bourne shell, or Perl and have recognizable file name extensions.

**To check for prohibited functions in delivered source files, execute the procedure steps that follow:**

---

- 1 If required, at the UNIX prompt on an AIT Sun, type **cleartool setview *ViewName***, press **Return**.
  - The *ViewName* is the name of a view allowing the source files to be accessible.
  - This step is only necessary if any of the source files are in ClearCase (in the VOB under configuration management).
- 2 At the UNIX prompt on the AIT Sun, type **cd *SrcPathname***, press **Return**.
  - The *SrcPathname* is the full path name to the location of the source files to be checked.
  - The *SrcPathname* will be in the ClearCase VOB if the source files are checked into ClearCase.
  - The *SrcPathname* can contain other directories that contain source files and/or more directories. The Prohibited Function Checker will search out all source files in subdirectories recursively.
- 3 At the UNIX prompt on the AIT Sun, type **/data3/ecs/TS1/CUSTOM/bin/DPS/EcDpAtMgrBadFunc ConfigFile /data3/ecs/TS1/CUSTOM/cfg/EcDpAtBA.CFG *FilesOrDirectories* > *ResultsFile***, press **Return**.
  - The *FilesOrDirectories* is a list of source file names or directory names of directories containing source files.
  - The *ResultsFile* is the file name for the results that are output.
  - For example, type **/data3/ecs/TS1/CUSTOM/bin/DPS/EcDpAtMgrBadFunc ConfigFile /data3/ecs/TS1/CUSTOM/cfg/EcDpAtBA.CFG main.c utils/ > myOutput**, press **Return**. Here, **main.c** is a source file and **utils/** is a directory that contains other source files.
- 4 At the UNIX prompt on the AIT Sun, type **vi *ResultsFile***, press **Return**.
  - The *ResultsFile* is the file name for the output results as produced in step 3.
  - Any text editor may be used for this procedure step.

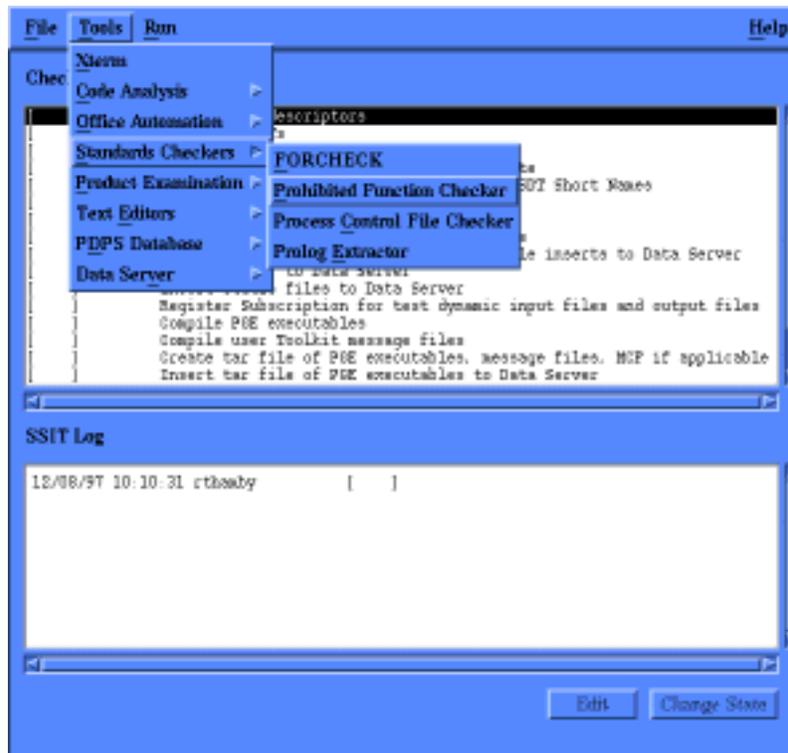


**Figure 26.5.5-1. Prohibited Function Checker**

## Prohibited Function Checker GUI

---

- 1** From the SSIT Manager, select **T**ools → **S**tandards Checkers → **P**rohibited Function **C**hecker from the menu.  
The Prohibited Function Checker GUI will be displayed.
  - 2** In the Prohibited Function Checker GUI, click on the **A**nalyze button.  
The File Selector GUI will be displayed.
  - 3** Within the **D**irectories subwindow, double click on the desired directory.  
Repeat this step until the directory with the source files to be checked are displayed in the **F**iles subwindow.
  - 4** Within the **F**iles subwindow, click on the source files to be checked. Each file clicked on will be highlighted.  
To choose groups of contiguous files, hold down the left mouse button and drag the mouse.  
To choose non-contiguous files, hold down the Control key while clicking on file names.
  - 5** In the File Selector GUI, click on the **O**K button.  
The File Selector GUI will disappear.  
The files selected in step 5 will be displayed in the Prohibited Function Checker GUI window as they are being checked.
  - 6** In the Prohibited Function Checker GUI, click on the **R**eport button.  
The **R**eport GUI will be displayed.  
For each file, a list of prohibited functions found will be displayed.
  - 7** Optionally, click on the **P**rint button or the **S**ave button.  
Choose **S**ave to save the results to a file; choose **P**rint to have the results printed on the default printer.  
Choosing **S**ave will bring up a GUI labeled **S**ave To **F**ile. Specify the directory and file name in which to save the results file.
  - 8** Optionally, in the Prohibited Function Checker GUI, highlight one of the source files listed. Then click on **V**iew.  
The **S**ource **C**ode GUI will be displayed.  
Occurrences of prohibited functions found in that source file will be highlighted.  
Click on the **N**ext button to bring into the window successive occurrences of prohibited functions (the **N**ext button does not bring in the next source file).  
Click on the **D**one button to close the **S**ource **C**ode GUI. Other source files may be examined similarly, one at a time.
  - 9** In the Prohibited Function Checker GUI, click on the **Q**uit button.  
The Prohibited Function Checker GUI will disappear.  
This ends the session.
-



**Figure 26.5.5-2. Invoking the Prohibited Function Checker**

## 26.5.6 Checking Process Control Files

The next task to accomplish is to check that the PCFs are syntactically correct and contain all necessary information for PGEs to run within the ECS DAAC production environment. Only one PCF can be associated with a PGE. The following procedure describes how to check PCFs for valid syntax and format, both using the GUI and the command line interface.

### 26.5.6.1 Checking Process Control Files GUI

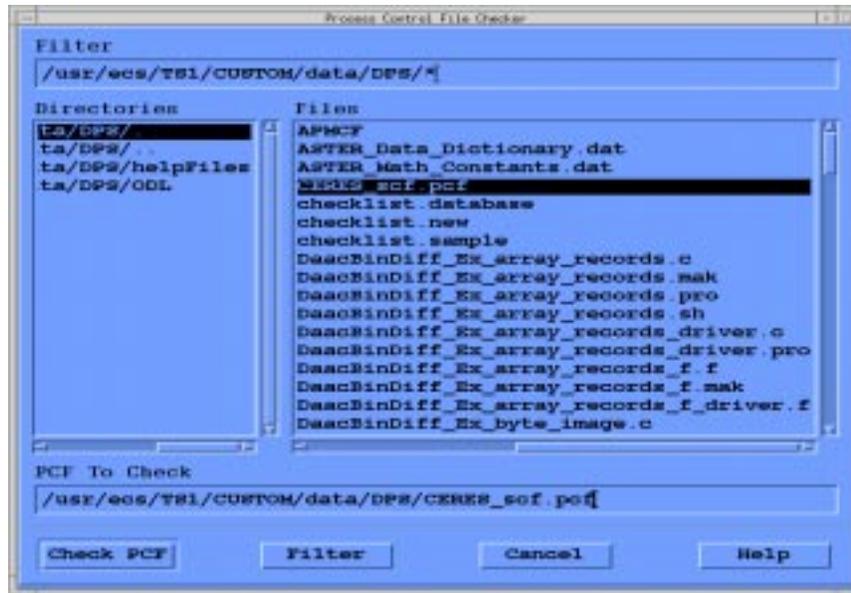
The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. The Process Control File(s) are available, accessible, and have read permissions.

If the source code files to be checked are in a VOB in ClearCase, a view has been set before the SSIT Manager was started.

## Checking Process Control Files GUI

- 1 From the SSIT Manager, select **Tools** → **Standards Checkers** → **Process Control File Checker** from the menu, see Figure 26.5.6-1.



**Figure 26.5.6-1. Process Control File Checker GUI**

- The Process Control File Checker GUI will be displayed.
- 2 In the **Directories** subwindow, double click on the desired directory.  
Repeat this step until the directory with the PCF(s) to be checked are displayed in the Files window.  
Use the **Filter** subwindow to limit which files are displayed.
- 3 Within the **Files** subwindow, click on the PCF to be checked.  
The file clicked on will be highlighted.  
Only one PCF can be checked at a time.
- 4 Click on the **Check PCF** button.  
A GUI labeled **PCF Checker Results** will be displayed.  
Results will be displayed in this window.
- 5 Optionally, click on the **Save** button or on the **Print** button.  
Choose **Save** to save the results to a file; choose **Print** to have the results printed on the default printer.  
Choosing **Save** will bring up a GUI labeled **Save To File**. Specify the directory and file name in which to save the results file.

Choosing **Print** and then clicking on the **OK** button will send the results to the default printer.

- 6 Click on the **Check Another** button or on the **Quit** button.

Choosing **Check Another** allows another PCF to be checked. Repeat steps 2 through 5.

Choosing **Quit** causes the Process Control File Checker GUI to disappear and ends the session.

---

### 26.5.6.2 Checking Process Control Files: Command-Line Version

This procedure describes using the command-line version of the Process Control File Checker to check process control files delivered with the science software.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The PCF files to be checked are available, accessible, and have read permissions for the operator.
2. You will need the command **pccheck.sh**. One way to see if this is available is to type **which pcccheck.sh**, press **Return**. If a path is displayed, then the directory is in your path. On the mini-DAAC Sun platform **p0ais01**, the pathname for the command is `/ecs/formal/TOOLKIT/bin/sun5/pccheck.sh`. In this case, you will have to set a ClearCase view to access that area.

**To check Process Control Files, execute the procedure steps that follow:**

---

- 1 If required, at the UNIX prompt on an AIT Sun, type **cleartool setview *ViewName***, press **Return**.
  - The ***ViewName*** is the name of a view allowing the Process Control File(s) to be accessible.
  - This step is only necessary if any of the Process Control Files are in ClearCase (in the VOB under configuration management).
- 2 At the UNIX prompt on AIT Sun, type **cd *PCFpathname***, press **Return**.
  - The ***PCFpathname*** is the full path name to the location of the Process Control File(s) to be checked.
  - The ***PCFpathname*** will be in the ClearCase VOB if the Process Control Files are checked into ClearCase.
- 3 At the UNIX prompt on an AIT Sun, type **/ecs/formal/TOOLKIT/bin/sun5/pccheck.sh -i *PCFfilename* > *ResultsFile***, press **Return**.
  - The ***PCFfilename*** is the full path name (directory and file name) to the Process Control File to check.
  - The ***ResultsFile*** is the file name for the results that are output.
  - The PCF Checker is also available on the SPR SGI machines. The easiest way to access it is to set a SDP Toolkit environment (any will do for purposes here, see

Section 9.2) and type `$PGSBIN/pccheck.sh -i PCFfilename > ResultsFile`, press **Return**.

- 4 At the UNIX prompt on the SPR SGI, type `vi ResultsFile`, press **Return**.
- The *ResultsFile* is the file name for the output results as produced in step 4.
  - Any text editor may be used for this procedure step.
- 

## 26.5.7 Extracting Prologs

The Project standards and guidelines are contained in the latest version of the document *Data Production Software and Science Computing Facility (SCF) Standards and Guidelines* (423-16-01). This ESDIS document mandates that science software delivered to the DAACs to be integrated into the ECS contain prologs in the source files. Prologs are internal documentation containing information about the software. The details are specified in the ESDIS document. Prologs must be at the top of every function, subroutine, procedure, or program module.

This procedure describes using the Prolog Extractor to extract prologs into a file. Note that the prolog extractor only extract the prologs it finds. It does not check the contents of prologs.

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. Prologs are assumed to be delimited by particular delimiters depending on the language type. Delimiters are listed in the table below:

***Prolog Delimiters***

<b>Language</b>	<b>Type</b>	<b>Delimiter</b>
FORTRAN 77	source	!F77
Fortran 90	source	!F90
C	source	!C
Ada	source	!Ada
FORTRAN 77	include	!F77-INC
Fortran 90	include	!F90-INC
C	include	!C-INC
Any Language	any	!PROLOG
All Languages	The end delimiter is always !END	

The Prolog Extractor recognizes the language type of the file by its file name extension. The table below lists assumed file name extensions:

***File Name Extensions***

File Type	File Name Extensions
FORTRAN 77	f, f77, ftn, for, F, F77, FTN, FOR
Fortran 90	f90, F90, f, F
FORTRAN 77/Fortran 90 include	inc, INC
C	c
C/C++ header	h
Ada	a, ada

**26.5.7.1     Extracting Prologs**

The Prolog Extractor can be started from the UNIX prompt. To do this, at the UNIX prompt on the AIT Sun, type `/data3/ecs/TS1/CUSTOM/bin/DPS/EcDpAtMgrPrologs`, press **Return**

**or**

- 
- 1     From the SSIT Manager, select the **T**ools → **S**tandards Checkers → **P**rolog **E**xtractor from the menu.  
       An xterm will be displayed on the AIT Sun.  
       Select the default ConfigFile. The output goes to a file called Prologs.txt in the directory from which the SSIT Manager was started.  
       The Prologs.txt file can be viewed by changing directories to the SSIT Manager directory and invoking a text editor. The file may also be sent to a printer.
  - 2     At the **F**iles(S)? (**-h** help) prompt, type in the file names and/or directory names containing the files.  
       Separate items with spaces.  
       The contents of the directory will be search recursively for files with valid file name extensions.  
       Use `./` to indicate current directory.  
       The time needed for the Prolog Extractor could be very long for large numbers of files and directories.  
       When extraction is complete, the message **Output written to file: ./prologs.txt** will be displayed.

- 3 At the program prompt **Hit Enter for another, "q <Enter>" to quit:** , press **Enter** to repeat process with another set of source files or type **q** and press **Enter** to quit.
    - The xterm will disappear.
  - 4 At a UNIX prompt on the AIT Sun, type **vi prologs.txt**, then press the **Enter** key. The extracted prologs file, named **prologs.txt**, will be brought into the editor. The default location of the **prologs.txt** file is the directory from which the SSIT Manager was invoked.
  - 5 Once the extracted prologs file has been examined, exit the editor.
- 

```

SOURCE CODE PROLOG EXTRACTOR
Configuration filename? (enter for default: ../../cfg/EcDpAtPrologs.CFG)
ECS mode? (enter for default: OPS)
TS1
File(s)? (enter -h for help)
/home/dps/ssit/*.c
Warning: Could not open message catalog "oodce.cat"
[Warning:
Invalid Resource Catalog directory path or no catalog installed
Applications can run with or without Resource Catalog
FYI : Values of ECS_HOME env variable and RC Directory path:/usr/ecs/ecsmode/CU
STOM/data/DPS/ResourceCatalogs
]

EcDpAtPrologs: Process Framework: ConfigFile ../../cfg/EcDpAtPrologs.CFG  ecs_m
ode ecsmode

Output written to file: /usr/ecs//TS1/CUSTOM/logs/prologs.txt
Hit return for another, 'q <return>' to quit:

```

**Figure 26.5.7-1. Prolog Extractor Sample Run.**

## 26.6 Compiling and Linking Science Software

Science software to the DAACs is in the form of source files. In order to be run and tested within the ECS, this science software has to be compiled and linked to form the binary executables that run within the PGEs. Science software is developed at independent Science Computing Facilities (SCFs) using the SDP Toolkit. The SDP Toolkit allows science software to be developed for ECS at independent SCFs. Once delivered to the DAACs for SSI&T, science software needs to be compiled and linked to one of the SDP Toolkit versions resident at the DAAC. The (PCFs) Process Control Files provide the interface between the science

software and the production system in the ECS. Since the process control files delivered to the DAACs for SSI&T were created and used at the SCFs, the path names in the PCF will need to be checked and revised to work at the DAACs.

To save time for the SSI&T Training Lesson, the compile and link with the SCF Version of the Toolkit will be omitted. The procedures are included in the student guide for future reference.

The next step is to set up a DAAC version SDP Toolkit environment, compile the PGE, and link to the DAAC Toolkit. This procedure will be performed at the SSI&T Training. The procedure steps for the two processes are the same except for the set up for the Toolkit environment and link with the corresponding Toolkit library.

### 26.6.1 Updating the Process Control File

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. A PCF for the PGE has been delivered and is available, accessible, and has read permissions.

**To update the PCF, execute the procedure steps that follow:**

---

- 1 From the SSIT Manager, click on the **Tools** menu, then choose **Xterm**. Then telnet to the SGI.
  - Alternatively, in any currently available xterm window, spawn a new session: type **xterm &**, press **Return**. Then telnet to the SGI.
- 2 If required, at the UNIX prompt on the SGI, type **cleartool setview *ViewName***, press **Return**.
  - The *ViewName* is the name of a view allowing the PCF to be accessible.
  - This step is only necessary if the PCF is in ClearCase (in the VOB under configuration management).
- 3 At the UNIX prompt on the Sun or on the SGI, type **cd *PCFpathname***, press **Return**.
  - The *PCFpathname* is the full path name to the location of the PCF. This location will be in the ClearCase VOB if the PCF is under configuration management.
- 4 At the UNIX prompt on the Sun or on the SGI, type **cleartool checkout -nc *PCFfilename***, press **Return**.
  - The *PCFfilename* is the file name of the PCF that is to be checked out (and later modified). The **-nc** flag means “no comment”; it suppresses ClearCase from prompting for a comment to be associated with the check out step.
- 5 Run the Process Control File Checker on the delivered PCF.
  - This will verify that the delivered PCF is correct before editing.
- 6 At a UNIX prompt on the Sun, type **vi *PCFfilename***, press **Return**.
  - The *PCFfilename* is the file name of the PCF to update.
  - Any text editor may be used such as *emacs*. For example, **emacs AST02.pcf**, press **Return**.

- 7 In the file, make changes to the default directories specified in each section of the PCF. All path names specified in the PCF must exist on the SGI.
- Each section begins with a line consisting of a ? in the first column followed by a label:
    - ? PRODUCT INPUT FILES
    - ? PRODUCT OUTPUT FILES
    - ? SUPPORT INPUT FILES
    - ? SUPPORT OUTPUT FILES
    - ? INTERMEDIATE INPUT
    - ? INTERMEDIATE OUTPUT
    - ? TEMPORARY I/O
  - Each of the above section heading lines will then be followed (not necessarily immediately; there may be comment lines) by a line that begins with a ! in the first column. These lines specify the default path names for each section.
    - If the line reads:
      - ! ~/runtime
 leave it unchanged. The tilde (~) is a symbol that represents \$PGSHOME.
    - If another path name is listed instead, it will probably need to be changed to a path name that exists at the DAAC on the SGI. When specifying a path name, use an absolute path name, not a relative path name.
- 8 In the file, look for science software specific entries in each section and make changes to the path names (field 3) as necessary. All path names specified in the PCF must exist on the SGI.
- The science software specific entries will have logical IDs (first field) *outside* of the range 10,000 to 10,999.
  - Where necessary, replace the path names in the third field of each entry with the path names appropriate to the DAAC environment.
  - Do not alter file entries that are used by the SDP Toolkit itself. These have logical IDs *in* the range 10,000 to 10,999.
  - For example, if the following entry was found in the PCF:
 

```
100 | A.granule | /MODIS/run/input | | | 1
```

 change /MODIS/run/input to the appropriate path name in the DAAC where the file A.granule is stored.
  - When specifying a path name, use an absolute path name, not a relative path name.
  - Do not include the file name with the path name. The file name belongs in field 2 by itself.
- 9 In the file, verify that the SUPPORT OUTPUT FILES section contains an entry to the shared memory pointer file.
- Look for the entry:
 

```
10111 | ShmMem | ~/runtime | | | 1
```

 The third field may be blank; this will work too.
  - If this entry is not within this section, add it.
- 10 Once changes have been made to the PCF, save the changes and exit the editor.
- The specifics depend upon which editor is being used. If using *vi*, the command sequence to enter is **:wq**, press **Return**.

- For other editors, refer to that editor's documentation.
  - 11** Again, run the Process Control File Checker on the PCF.
  - 12** If the PCF had been checked out of ClearCase, at the UNIX prompt on the SGI, type **cleartool checkin -nc *PCFfilename***, press **Return**.
    - The *PCFfilename* is the file name of the modified PCF. The **-nc** flag means "no comment"; it suppresses ClearCase from prompting for a comment to be associated with the check in step.
- 

## 26.6.2 Setting up a SDP Toolkit Environment

The purpose of the SDP Toolkit is to allow science software to be developed for ECS at independent SCFs and to provide:

- An interface to the ECS system, including PDPS and CSMS and information management.
- A method for Science software to be portable to different platforms at the DAAC.
- A method to reduce redundant coding at the SCF.
- Value added functionality for science software development.

The SDP Toolkit is divided into two groups of tools:

### 26.6.2.1 Mandatory Tools

- Error and Status Message Facility (SMF) - provides general error handling, status log messaging, and interface to CSMS services.
- Process Control Tools - provides the primary interface to the PDPS. Allows access to physical filenames and file attributes and retrieval of user defined parameters.
- Generic Input/Output - provides the means to open and close support, temporary and intermediate duration files.
- Memory Allocation Tools - simple wrappers on native C functions which track memory usage in the SDPS, and shared memory tools which enable the sharing of memory among executables within a PGE.

### 26.6.2.2 Optional Tools

- Ancillary Data Access - provides access to NMC data and Digital Elevation (DEM) data.
- Celestial Body Position - locates the sun, moon and the planets.
- Coordinate System Conversion - coordinate conversions between celestial reference.
- Constant and Unit Conversion - physical constants and unit conversions.
- IMSL - mathematical and statistical support.

In the description of the Toolkit routines, descriptive information is presented in the following format:

## TOOL TITLE

<b>NAME:</b>	Procedure or routine name
<b>SYNOPSIS:</b>	C: C language call
<b>FORTTRAN:</b>	FORTTRAN77 or Fortran90 language call
<b>DESCRIPTION:</b>	Cursory description of routine usage
<b>INPUTS:</b>	List and description of data files and parameters input to the routine
<b>OUTPUTS:</b>	List and description of data files and parameters output from the routine
<b>ENTERS:</b>	List of returned parameters indicating success, failure, etc.
<b>EXAMPLES:</b>	Example usage of routine
<b>NOTES:</b>	Detailed information about usage and assumptions
<b>REQUIREMENTS:</b>	Requirements from PGS Toolkit Specification, Oct. 93 which the routine satisfies

The science software delivered to the DAACs is expected to work with either the SCF SDP Toolkit or the DAAC SDP Toolkit which are both installed each DAAC. During the pre-SSI&T initial testing, the SCF Toolkit should be used.

There are several versions of the SCF/DAAC SDP Toolkit installed on the SGI Power Challenges at the DAACs for the Release 4 system. The toolkit versions at the DAACs differ according to:

Object Type - The operating system on the SGI Power Challenges on Release 4 is IRIX 6.2, a 64-bit operating system. To be backward compatible, the SGI operating system will allow new 64-bit and 32-bit objects to be built as well as the older 32-bit machines. Each of these object types are designated by placing a cc flag on the command line to enable a particular mode with the SGI C compiler.

New 64-bit: cc flag = -64

New 32-bit: cc flag = -n32

Old 32-bit: cc flag = -32 (SCF's only)

Library Type - The SDP Toolkit uses different libraries depending upon whether FORTRAN 77 or FORTRAN 90 source code is being linked. If C source code is to be linked, then either language version of the library will work.

The following Table summarizes the available SDP Toolkits used by the SGI science processors.

**Table 26.6.2-1. SDP Toolkits used by the SGI science processors.**

SDP Version	Language Type	Library Object Type	\$PGSHOME	\$PGSBIN
SCF	FORTRAN 77 or C	Old 32-bit mode	\$CUSTOM/TOOLKIT/toolkit /bin/sgi_scf_f77/	\$CUSTOM/TOOLKIT/toolkit /bin/sgi_scf_f77/
SCF	Fortran 90 or C	Old 32-bit mode	\$CUSTOM/TOOLKIT/toolkit /bin/sgi_scf_f90/	\$CUSTOM/TOOLKIT/toolkit /bin/sgi_scf_f90/
SCF	FORTRAN 77 or C	New 32-bit mode	\$CUSTOM/TOOLKIT/toolkit /bin/sgi32_scf_f77/	\$CUSTOM/TOOLKIT/toolkit /bin/sgi32_scf_f77/
SCF	Fortran 90 or C	New 32-bit mode	\$CUSTOM/TOOLKIT/toolkit /bin/sgi32_scf_f90/	\$CUSTOM/TOOLKIT/toolkit /bin/sgi32_scf_f90/
SCF	FORTRAN 77 or C	64-bit mode	\$CUSTOM/TOOLKIT/toolkit /bin/sgi64_scf_f77/	\$CUSTOM/TOOLKIT/toolkit /bin/sgi64_scf_f77/
SCF	Fortran 90 or C	64-bit mode	\$CUSTOM/TOOLKIT/toolkit /bin/sgi64_scf_f90/	\$CUSTOM/TOOLKIT/toolkit /bin/sgi64_scf_f90/
DAAC	FORTRAN 77 or C	64-bit mode	\$CUSTOM/TOOLKIT/toolkit /bin/sgi64_daac_f77/	\$CUSTOM/TOOLKIT/toolkit /bin/sgi64_daac_f77/ /
DAAC	Fortran 90 or C	64-bit mode	\$CUSTOM/TOOLKIT/toolkit /bin/sgi64_daac_f90/	\$CUSTOM/TOOLKIT/toolkit /bin/sgi64_daac_f90/

### 26.6.2.3 Setting Up the SDP Toolkit Environment

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The C shell (or a derivative) is the current command shell.

**To check set up a SDP Toolkit environment, execute the procedure steps that follow:**

- 1 At the UNIX prompt on the SGI, type **setenv PGSHOME *ToolkitPathname***, press **Return**.
  - The *ToolkitPathname* is the home directory of the particular SDP Toolkit version being used. Refer to Table 26.6.2-1. Note that the setting of PGSHOME shown in this table may differ in your local DAAC.
  - Korn shell users, type **PGSHOME=*ToolkitPathname*; export PGSHOME**, press **Return**.
- 2 At the UNIX prompt on the SGI, type **source \$PGSHOME/bin/sgiX/pgs-dev-env.csh**, press **Return**.
  - The *sgiX* is one of: **sgi** for 32-bit version of the Toolkit or **sgi64** for 64-bit version of the Toolkit. Refer to the last column of Table 26.6.2-1. for path names to the file to source.

- Korn shell users, type `. $PGSHOME/bin/sgiX/pgs-dev-env.ksh`, press **Return** (note the “dot” and then space at the beginning of this command).
- 3** This step is optional. Edit the file `$HOME/.cshrc` and add the line **alias *aliasname* ‘setenv PGSHOME *ToolkitPathname*; source \$PGSHOME/bin/sgiX/pgs-dev-env.csh; echo “*textmessage*” ‘**.
- The *aliasname* is the name of the alias. For example, to set up an environment for the DAAC version of the Toolkit for FORTRAN 77 (or C), you might use **DAACf77** as an *aliasname*.
  - The *ToolkitPathname* is the home directory of the particular SDP Toolkit version being used. Refer to Table 26.6.2-1. Note that the setting of PGSHOME shown in this table may differ in your local DAAC.
  - The *sgiX* is one of: **sgi** for 32-bit version of the Toolkit or **sgi64** for 64-bit version of the Toolkit.
  - The *textmessage* is a message that will be echoed to the screen signifying that a new Toolkit environment has been set up. It must be enclosed within double quotes (“”). An example may be, “**DAAC F77 Toolkit environment is now set.**”
  - A complete example (it should be all on one line in the `.cshrc` file):
 

```
alias DAACf77 ‘setenv PGSHOME
                /$CUSTOM/TOOLKIT/bin/sgi64_daac_f77/; source
                $PGSHOME/bin/sgi/pgs-dev-env.csh; echo “DAAC F77
                Toolkit environment is now set” ‘
```
  - Other aliases for other versions of the Toolkit can be set up similarly.

#### 26.6.2.4 An example of Compile procedures used to produce a PGE.exe :

##### 1 Setup for PGE07:

```
/home/emcleod/MODIS/STORE/PGE07/MOD_PR10/source
rm MOD_PR10.exe
rm *.o
setenv PGSHOME /usr/ecs/OPS/CUSTOM/TOOLKIT/sgi32_daac_f77/
source $PGSHOME/bin/sgi32/pgs-dev-env.csh
source
/home/emcleod/MODIS/STORE/PGE07/MOD_PR10/source/MODIS_setup.csh.pge07
alias
n32_f77
env
make -f MOD_PR10.mk &
ls -l *exe
setenv PGS_PC_INFO_FILE
/home/emcleod/MODIS/STORE/PGE07/MOD_PR10/source/MOD_PR10.pcf
ls
MOD_PR10.exe &
confirm execution when done by looking at file : vi
MOD_PR10_ClopyL1BmetaToSnow.c
```

```

see if job is running: ps -u emcleod "time updating for MOD_PR10"
p0spg01{emcleod}88: ps -u emcleod
  PID TTY    TIME CMD
  267 ?      3:13 biod
 25825 pts/11  0:01 csh
 21994 pts/10  0:01 csh
 23215 pts/16  0:00 csh
 26242 pts/10  0:07 MOD_PR10.
 26089 pts/11  0:01 xedit
 26318 pts/10  0:00 ps
p0spg01{emcleod}105: pwd
/tmp_mnt/home/emcleod/MODIS/STORE/PGE07/MOD_PR10/source
p0spg01{emcleod}106: ls
MODIS_setup.csh.pge07      MOD_PR10_CopyL1BmetaToSnow.c
MODIS_setup_OPS           MOD_PR10_CopyL1BmetaToSnow.o
MOD_PR10.exe              MOD_PR10_MakeMeta.c
MOD_PR10.h                MOD_PR10_MakeMeta.o
MOD_PR10.mcf              MOD_PR10_Process_Cloud.c
MOD_PR10.mk               MOD_PR10_Process_Cloud.o
MOD_PR10.pcf              MOD_PR10_Process_GEO.c
MOD_PR10_AAmain.c         MOD_PR10_Process_GEO.o
MOD_PR10_AAmain.o         MOD_PR10_Process_L1B.c
MOD_PR10_Compute_Snow.c   MOD_PR10_Process_L1B.o
MOD_PR10_Compute_Snow.o   MOD_PR10_Process_SnowFile.c
MOD_PR10_CopyGEOmetaToSnow.c MOD_PR10_Process_SnowFile.o
MOD_PR10_CopyGEOmetaToSnow.o compile_smf.csh
p0spg01{emcleod}107:

```

### 26.6.2.5 Example of a PGE Executables Tar File Insertion Script

This example was produced in Drop 4 and is provided for review only. Go to the section Placing the Science Software Executable (SSEP) on the Data Server which includes the Insertion of a PGE Tar file..

```

Configuration filename? (enter for default:
../../cfg/EcDpAtInsertExeTarFile.CFG)
ECS Mode of operations? (enter for default: OPS)
Name of PGE? (enter for default: PGE07)
Science software version of PGE? (enter for default: 2)
Staged filename to insert (including FULL path)? (enter for default:
/home/emcleod/SSEP/PGE07.tar)
Associated ASCII metadata filename to insert (including FULL path)? (enter for
default /home/emcleod/SSEP/PGE07.tar.met)
Top level shell filename within tar file? (enter for default: PGE07.csh)
PGE07.csh
Warning: Could not open message catalog "oodce.cat"

```

```
/usr/ecs//OPS/CUSTOM/bin/DPS/EcDpAtInsertExeTarFile: Process Framework:
ConfigFile ../cfg/EcDpAtInsertExeTarFile.CFG ecs_mode OPS
Performing INSERT.....
Retrieved from IOS for ESDT = PGEEXE the DSS UR =
UR:15:DsShSciServerUR:13:[MDC:DSSDSR
Trying to make a request to [MDC:DSSDSRV]
Trying to make a request to [MDC:DSSDSRV]
Insert to Data Server and PDPS database update successful for:
  PGE name = 'PGE07'
  Ssw version = '2'
  ESDT = 'PGEEXE'
  ESDT Version = "001"
  staged file = '/home/emcleod/SSEP/PGE07.tar'
  metadata file = '/home/emcleod/SSEP/PGE07.tar.met'
  Top level shell name = 'PGE07.csh'
Inserted at UR:
'UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[MDC:DSSDSRV]:14:LM:PGEEXE:94'
Hit return to run again, 'q <return>' to quit:
```

---

### 26.6.3 Compiling Status Message Facility (SMF) Files

Status Message Facility (SMF) files are used by the SDP Toolkit to facilitate a status and error message handling mechanism for use in the science software and to provide a means to send log files, informational messages, and output data files to DAAC personnel or to remote users.

Science software making use of the SMF need particular header (include) files when being built and also need particular runtime message files when being run. Both the header and message files are produced by running a SMF “compiler” on a message text file. These message text files should be part of the science software delivery to the DAAC. They typically have a .t file name extension.

This procedure describes how to compile the SMF message text files to produce both the necessary include files and the necessary runtime message files.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The C shell (or a derivative) is the current command shell.

**To check compile status message facility (SMF) files, execute the procedure steps that follow:**

---

- 1 From the SSIT Manager, click on the **T**ools menu, then choose **X**term. Then telnet to the SGI.
    - Alternatively, in any currently available xterm window, spawn a new session: type **xterm &**, press **Return**. Then telnet to the SGI.
    - It is recommended that this procedure begin within a new command shell on the SGI.
  - 2 If required, at the UNIX prompt on the SGI, type **cleartool setview ViewName**, press **Return**.
    - The *ViewName* is the name of a view allowing the SMF files to be accessible.
    - This step is only necessary if any of the SMF files are in ClearCase (in the VOB under configuration management).
  - 3 At the UNIX prompt on the SGI, type **setenv PGSHOME ToolkitPathname**, press **Return**. Then type, source **\$PGSHOME/bin/sgiX/pgs-dev-env.csh**, press **Return**.
    - The *ToolkitPathname* is the home directory of the desired SDP Toolkit version.
    - The *sgiX* refers to the appropriate processor. For example, type **source \$PGSHOME/bin/sgi/pgs-dev-env.csh**, press **Return**.
  - 4 At the UNIX prompt on the SGI, type **cd pathname**, press **Return**.
    - The *pathname* is the full path name to the directory containing the SMF text files.
    - The SMF text files will typically have .t file name extensions.
  - 5 At the UNIX prompt on the SGI, type **smfcompile -f textfile.t -lang** , press **Return**.
    - The *-lang* is a flag that indicates for what language to compile. This flag can be one of **-c** to produce C header files, **-f77** to produce FORTRAN 77 include files, and **-ada** to produce Ada include files. The default is for C include files. For example, type **smfcompile -f77 PGS\_MODIS\_39123.t**, press **Return**.
    - The *textfile* is the file name of the SMF text file delivered with the science software.
    - The SMF text files will typically have .t file name extensions.
    - File names for SMF text files usually have the “seed” value used by the file as part of its file name (*e.g.* PGS\_MODIS\_39123.t where 39123 is the seed number).
    - Only one such SMF text file can be compiled at a time; wildcards cannot be used.
    - The SMF compiler may be run with the additional flags **-r** and **-i** as in, **smfcompile -f textfile.t -r -i**. The **-r** automatically places the runtime message file in the directory given by the environment variable PGSMMSG. The **-i** automatically places the include file in the directory given by the environment variable PGSINC. For example, type **smfcompile -ada -r -i -f PGS\_MODIS\_39123.t**, press **Return**. Note that the **-f** flag must always be immediately followed by the name of the text file.
  - 6 If necessary, at the UNIX prompt on the SGI, type **mv IncludeFilename \$PGSINC**, press **Return**. Then, type **mv RuntimeFilename \$PGSMMSG**, press **Return**.
    - This step is only required if either the **-r** or the **-i** flag were not used in step 5.
    - The *IncludeFilename* is the name of the include file created in step 5.
    - The *RuntimeFilename* is the name of the runtime message file created in step 5.
    - For example, type **mv PGS\_MODIS\_39123.h \$PGSINC**, press **Return**. And then type, **mv PGS\_MODIS\_39123 \$PGSMMSG**, press **Return**.
-

#### 26.6.4 Building Science Software with the SCF Version of the SDP Toolkit

In order to be tested at the DAAC, science software must be compiled and linked to produce binary executables. These binary executables are then packaged into one or more shell scripts as defined by the science software developer (Instrument Team). These science software packages are the Product Generation Executives (PGEs) delivered to the DAACs during SSI&T. PGEs are the smallest schedulable unit of science software in the ECS.

Building science software into PGEs should be done in accordance with supplied documentation. Such documentation should describe the process in detail. In general, science software deliveries will come with make files or other build scripts to automate the build process.

In general, science software will be built, run, and tested with the SCF version of the SDP Toolkit to ensure that the software has been successfully ported to the DAAC. Once this test has been completed successfully, the science software will be re-built, rerun, and re-tested with the DAAC version of the SDP Toolkit. Only with the DAAC Toolkit can the PGE be run within the ECS.

This procedure describes some general principals that may or may not be applicable to a particular science software delivery for building a PGE with the SCF version of the SDP Toolkit. See Section for Building a PGE with the DAAC version of the SDP Toolkit.

Building Science Software with the SCF Version of the SDP Toolkit - Activity Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

- 1 The C shell (or a derivative) is the current command shell.

**To build science software with the SCF version of the SDP Toolkit, be aware of the “typical” procedure steps that follow:**

---

- 1 Read all instructional material supplied with the science software delivery. Such material should be the primary source of information on how to build the science software.
  - Read the *Systems Description* document and the *Operations Manual*. Both of these or their equivalent should be in the delivery.
  - Typically, there will be “readme” files accompanying each PGE in the directory structure, perhaps in a doc directory.
  - Text files (ASCII) may be viewed with the UNIX command, *more* or with the *vi* editor.
  - PostScript documents may be viewed with *ghostview*, which is accessible via the SSIT Manager.
  - PDF formatted documents may be viewed with *acroread*, the Acrobat Reader, also accessible via the SSIT Manager.
  - Documents in Microsoft Word and related formats may be viewed through the Microsoft Windows™ 3.1 emulator. The MS Windows emulator may be accessed from the SSIT Manager.

- 2 From the SSIT Manager, click on the **T**ools menu, then choose **X**term. Then telnet to the SGI.
  - Alternatively, in any currently available xterm window, spawn a new session: type **xterm &**, press **Return**. Then telnet to the SGI.
  - It is recommended that this procedure begin within a new command shell on the SGI.
- 3 At the UNIX prompt on the SGI, type **setenv PGSHOME ToolkitPathname**, press **Return**. Then type, source **\$PGSHOME/bin/sgiX/pgs-dev-env.csh**, press **Return**.
  - The *ToolkitPathname* is the home directory of the desired SDP Toolkit version, in this case, an SCF version.
  - The *sgiX* refers to the appropriate processor. For example, type **source \$PGSHOME/bin/sgi/pgs-dev-env.csh**, press **Return**.
- 4 If make files are in ClearCase, at the UNIX prompt on the SGI, type **cleartool setview ViewName**, press **Return**. Then, **cd pathname**, press **Return**. And **cleartool checkout -nc makefile**, press **Return**.
  - The *ViewName* is the name of a view allowing the make files to be accessible.
  - The *pathname* is the full path name of the directory (in the VOB) where the make file has been checked in.
  - The *makefile* is the name of the make file to examine and possibly modify.
  - This step is only necessary if any of the make files (or build scripts) are in ClearCase (in the VOB under configuration management).
- 5 Examine and alter (if necessary) any make files using any text editor (*vi*, *emacs*).
  - There may be several make files for a particular PGE.
  - Verify that compiler, compiler flag settings, and other environment variable settings are appropriate.
  - The Toolkit set up (from step 3) will set many environment variables which can be used in the make files. To see the current environment variable settings, at the UNIX prompt on the SGI, type **env**, press **Return**.
- 6 Compile any required status message facility (SMF) files and place the header file(s) in the proper directory for building.
- 7 Verify that the directory structure for the PGE source files matches the directory structure expected by the make files or build scripts.
  - Deliveries may come with install scripts that place files into various directories according to some predefined structure.
- 8 If necessary, at the UNIX prompt on the SGI, type **cleartool checkout -nc filename**, press **Return**.
  - The *filename* is the file name of the executable, object file, or make file to be checked out of ClearCase. The **-nc** flag means “no comment”; it suppresses ClearCase from prompting for a comment to be associated with the check out step.
  - Note that checking in executable or object files is *not* recommended in the first place.
- 9 Build the software in accordance with instructions delivered.
  - Science software deliveries may come with a single, top-level script to do the entire build or the build process could involve a series of steps, each of which should be described fully in the delivered documentation.

- Choose the most appropriate optimization/debugger flag. During testing, the "-g" is often used. This results in larger and slower executables, but assists in debugging. For production, the "-O" flag may be used to optimize execution time. Variants of the "-g" and "-O" flags may be incompatible.
- 10** If necessary, at the UNIX prompt on the SGI, type **cleartool checkin filename -nc**, press **Return**.
- The *filename* is the file name of the executable, object file, or make file to be checked into ClearCase. The **-nc** flag means “no comment”; it suppresses ClearCase from prompting for a comment to be associated with the check in step.
  - Note that checking in executable or object files is *not* recommended.
- 

### 26.6.5 Building Science Software with the DAAC Version of the SDP Toolkit

In general, science software will be built, run, and tested with the SCF version of the SDP Toolkit to ensure that the software has been successfully ported to the DAAC. Once this test has been completed successfully, the science software will be re-built, rerun, and re-tested with the DAAC version of the SDP Toolkit. Only with the DAAC Toolkit can the PGE be run within the ECS.

This procedure describes some general principals that may or may not be applicable to a particular science software delivery for building a PGE with the DAAC version of the SDP Toolkit.

Building Science Software with the DAAC Version of the SDP Toolkit - Activity Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

The C shell (or a derivative) is the current command shell.

**To build science software with the DAAC version of the SDP Toolkit, be aware of the “typical” procedure steps that follow:**

---

- 1** Read all instructional material supplied with the science software delivery. Such material should be the primary source of information on how to build the science software.
  - Read the *Systems Description* document and the *Operations Manual*. Both of these or their equivalent should be in the delivery.
  - Typically, there will be “readme” files accompanying each PGE in the directory structure, perhaps in a doc directory.
  - Text files (ASCII) may be viewed with the UNIX command, *more* or with the *vi* editor.
  - PostScript documents may be viewed with *ghostview*, which is accessible via the SSIT Manager.

- PDF formatted documents may be viewed with *acroread*, the Acrobat Reader, also accessible via the SSIT Manager.
  - Documents in Microsoft Word and related formats may be viewed through the Microsoft Windows™ 3.1 emulator. The MS Windows emulator may be accessed from the SSIT Manager.
- 2 From the SSIT Manager, click on the **T**ools menu, then choose **X**term. Then telnet to the SGI.
- Alternatively, in any currently available xterm window, spawn a new session: type **xterm &**, press **Return**. Then telnet to the SGI.
  - It is recommended that this procedure begin within a new command shell on the SGI.
- 3 At the UNIX prompt on the SGI, type **setenv PGSHOME ToolkitPathname**, press **Return**. Then type, source **\$PGSHOME/bin/sgiX/pgs-dev-env.csh**, press **Return**.
- The *ToolkitPathname* is the home directory of the desired SDP Toolkit version, in this case, a DAAC version.
  - The *sgiX* refers to the appropriate processor. For example, type **source \$PGSHOME/bin/sgi/pgs-dev-env.csh**, press **Return**.
- 4 If make files are in ClearCase, at the UNIX prompt on the SGI, type **cleartool setview ViewName**, press **Return**. Then, **cd pathname**, press **Return**. And **cleartool checkout -nc makefile**, press **Return**.
- The *ViewName* is the name of a view allowing the make files to be accessible.
  - The *pathname* is the full path name of the directory (in the VOB) where the make file has been checked in.
  - The *makefile* is the name of the make file to examine and possibly modify.
  - This step is only necessary if any of the make files (or build scripts) are in ClearCase (in the VOB under configuration management).
- 5 Examine and alter (if necessary) any make files using any text editor (*vi*, *emacs*). If the software had already been built and tested with the SCF version of the SDP Toolkit, this step may be unnecessary.
- There may be several make files for a particular PGE.
  - Verify that compiler, compiler flag settings, and other environment variable settings are appropriate.
  - The Toolkit set up (from step 3) will set many environment variables which can be used in the make files. To see the current environment variable settings, at the UNIX prompt on the SGI, type **env**, press **Return**.
- 6 Compile any required status message facility (SMF) files and place the header file(s) in the proper directory for building.
- 7 Verify that the directory structure for the PGE source files matches the directory structure expected by the make files or build scripts.
- Deliveries may come with install scripts that place files into various directories according to some predefined structure.
- 8 If necessary, at the UNIX prompt on the SGI, type **cleartool checkout -nc filename**, press **Return**.

- The *filename* is the file name of the executable, object file, or make file to be checked out of ClearCase. The **-nc** flag means “no comment”; it suppresses ClearCase from prompting for a comment to be associated with the check out step.
  - Note that checking in executable or object files is *not* recommended in the first place.
- 9 Build the software in accordance with instructions delivered.
- Science software deliveries may come with a single, top-level script to do the entire build or the build process could involve a series of steps, each of which should be described fully in the delivered documentation.
    1. Choose the most appropriate optimization/debugger flag. During testing, the "-g" is often used. This results in larger and slower executables, but assists in debugging. For production, the "-O" flag may be used to optimize execution time. Variants of the "-g" and "-O" flags may be incompatible.
- 10 If necessary, at the UNIX prompt on the SGI, type **cleartool checkin filename -nc**, press **Return**.
- The *filename* is the file name of the executable, object file, or make file to be checked into ClearCase. The **-nc** flag means “no comment”; it suppresses ClearCase from prompting for a comment to be associated with the check in step.
  - Note that checking in executable or object files is *not* recommended.
- 

## 26.7 Running a PGE in a Simulated SCF Environment

Science software delivered to the DAACs for SSI&T was developed and tested at individual SCFs using the SCF version of the SDP Toolkit. Before linking the software with the DAAC version of the Toolkit and integrating it with the ECS, it is prudent to first link the software to the SCF version of the Toolkit and run it as it was run at the SCF. This type of testing can reveal problems associated with the process of porting the software to another platform whose architecture may be quite different from the one on which the software was developed.

A simulated SCF environment means that the software is built using the SCF version of the Toolkit and is run from the UNIX command line. The Planning and Data Processing System (PDPS) and the Data Server are not involved.

The procedures which follow describe how to run the science software in a simulated SCF environment.

### 26.7.1 Setting Up the Environment for Running the PGE

Running a PGE that has been built with the SCF version of the SDP Toolkit requires some environment set up as it does at the SCF. This procedure describes how to set up a simulated SCF environment.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

- The Process Control File (PCF) exists and has been tailored for the DAAC environment.
- The C shell or a derivative (*e.g.* T shell) is the current user shell.

**To set up an environment for running the PGE, execute the procedure steps that follow:**

---

- 1 From the SSIT Manager, click on the **T**ools menu, then choose **X**term. Then telnet to the SPR SGI.
  - Alternatively, in any currently available xterm window, spawn a new session: type **xterm &**, press **Return**. Then telnet to the SPR SGI.
  - It is recommended that this procedure begin within a new command shell on the SPR SGI.
- 2 At the UNIX prompt on the SPR SGI, type **setenv PGSHOME ToolkitPathname**, press **Return**. Then type, source **\$PGSHOME/bin/sgiX/pgs-dev-env.csh**, press **Return**.
  - The **ToolkitPathname** is the home directory of the desired SDP Toolkit version, in this case, an SCF version.
  - The **sgiX** refers to the appropriate processor (see Section 9.2 ?). For example, type **source \$PGSHOME/bin/sgi/pgs-dev-env.csh**, press **Return**.
 At the UNIX prompt on the SPR SGI, type **setenv PGS\_PC\_INFO\_FILE PCFpathname/PCFfilename**, press **Return**.
  - The **PCFpathname** is the full path name to the location of the Process Control File (PCF) to be associated with this PGE.
  - The **PCFfilename** is the file name of the PCF.
  - For example, **setenv PGS\_PC\_INFO\_FILE /disk2/PGE32/PCF/PGE32.pcf**, press **Return**.
- 3 Optionally, at the UNIX prompt on the SPR SGI, type **rm LogPathname/LogFilename**, press **Return**.
  - The **LogPathname** is the full path name to the location of the PGE log files for this PGE.
  - The **LogFilename** is the file name of the PGE log file to remove from a previous run of the same PGE. PGE log files can be Status, User, or Report.
  - The **LogFilename** may use wildcard characters to remove all of the log files at the same time.
  - This step is optional. If log files from a previous run of the same PGE are not removed, they will be appended with the information from the current run.
  - The environment will then be set up. Continue on the next Section.
- 4 If necessary, set any other shell environment variables needed by the PGE by sourcing the appropriate scripts or setting them on the command line.
  - For example, for a PGE requiring IMSL, at the UNIX prompt on the SPR SGI, type **source /usr/ecs/TS1/COTS/imsl/vni/ipt/bin/iptsetup.cs**, press **Return**
  - For some PGEs, the environment variables to be set will be specified in the documentation or the files to source will be supplied in the delivery. Refer to documentation included in the delivery.

---

## 26.7.2 Running and Profiling the PGE

Profiling a PGE refers to the process of gathering information about the runtime behavior of a PGE. The information includes the wall clock time, user time and system time devoted to the PGE; the amount of memory used; the number of page faults; and the number of input and output blocks.

The Planning and Data Processing System (PDPS) database must be populated with the above information when the PGE is registered with the PDPS during the integration phase of SSI&T. This information may be delivered with the PGE or it may need to be determined at the DAAC during SSI&T. This procedure addresses the latter need.

Note that profiling, as used here, does not involve altering the binary executable to produce instrumented code.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

- The PGE has been built successfully with the SCF version of the SDP Toolkit .
- The required SMF runtime message files have been produced and placed in the correct locations.
- The Process Control File (PCF) exists and has been tailored for the DAAC environment.
- The required environment for running the PGE has been set up.
- The required input files are available and accessible.
- The C shell or a derivative (*e.g.* T shell) is the current user shell.

**To run and profile the PGE, execute the procedure steps that follow:**

---

- 1 At the UNIX prompt on the SPR SGI in the window containing the set up environment, type **cd *PGEbinPathname***, press **Return**.
  - The *PGEbinPathname* is the full path name of the directory containing the built PGE binary executable. For example, **cd /disk3/PGE32/bin/**, press **Return**.
- 2 At the UNIX prompt on the SPR SGI, type **/usr/ecs/<mode>/CUSTOM/bin/DPS/EdpPrRusage *PGE* >& *ResultsOut***, press **Return**.
  - The *PGE* is the name given to the PGE binary executable.
  - The *ResultsOut* is the file name in which to capture the profiling results as well as any messages from standard output (stdout) and standard error (stderr) that may be produced by the running PGE. Note that PGEs should *not* write to stdout or stderr.

- The **EcDpPrRusage** is the profiling program that outputs information about the runtime behavior of the PGE.
  - Depending upon the PGE, it may take some time before the UNIX prompt returns.
- 3 At the UNIX prompt on the SPR SGI, type **echo \$status**, press **Return**.
- The **\$status** is an environment variable that stores the exit status of the previous program run, in this case, the PGE.
  - A status of zero indicates success; a status of non-zero indicates an error of some kind.
  - The meaning of a non-zero exit status should be documented and included with the DAPs.
  - This command must be run *immediately* after the **EcDpPrRusage** command.
- 4 At the UNIX prompt on the SPR SGI, type **vi ResultsOut**, press **Return**.
- The **ResultsOut** is the file name under which the profiling output was saved. Other output of the PGE may also be in this file.
  - The **EcDpPrRusage** results may then be recorded and used when the PGE is registered in the PDPS.
  - Any text editor/viewer may be used.

**Sample of an Rusage File produced:**

```
p0spg01{emcleod}6: more Profile.out
# source .cshrc
# cd TEST/MOD*
# ls
# /usr/ecs/OPS/CUSTOM/bin/DPS/EcDpPrRusage MOD_PR10.exe > Profile.out
p0spg01{emcleod}9: more profile.out
# Resource Usage Information
COMMAND=MOD_PR10.exe
EXIT_STATUS=0
ELAPSED_TIME=233.583145
USER_TIME=10.046158
SYSTEM_TIME=7.555547
MAXIMUM_RESIDENT_SET_SIZE=4080
AVERAGE_SHARED_TEXT_SIZE=0
AVERAGE_UNSHARED_DATA_SIZE=0
AVERAGE_UNSHARED_STACK_SIZE=0
PAGE_RECLAIMS=151
PAGE_FAULTS=0
SWAPS=0
```

```
BLOCK_INPUT_OPERATIONS=2
BLOCK_OUTPUT_OPERATIONS=2710
MESSAGES_SENT=0
MESSAGES_RECEIVED=0
SIGNALS_RECEIVED=0
VOLUNTARY_CONTEXT_SWITCHES=1095
INVOLUNTARY_CONTEXT_SWITCHES=2
p0spg01{emcleod}10:
```

---

## 26.8 File Comparison and Data Visualization

The purpose of File Comparison is to verify that the output files produced at the DAAC are identical (within tolerances) to the test output files delivered with the DAPs. A successful comparison is a strong indication that the porting of the science software from the development facility at the SCF to the operational facility at the DAAC has not introduced any errors.

A number of file comparison tools are available during SSI&T via the SSIT Manager GUI or they can be invoked from the UNIX command line. Two tools are available for comparing HDF or HDF-EOS files, one tool for comparing ASCII files, and another tool for assisting in comparing binary files.

### 26.8.1 Using the GUI HDF File Comparison GUI

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. Two HDF or HDF-EOS files exist with similar structures.
3. The Instrument Team has delivered test output files.
4. If either of the two HDF/HDF-EOS files is in the ClearCase VOB, a ClearCase view was set before the SSIT Manager was started.

#### **Comparing Two HDF or HDF-EOS Files Using the HDF File Comparison GUI**

---

- 1 From the SSIT Manager, select **Tools**→**Product Examination** → **HDF** from the menu. The HDF File Comparison GUI window will be displayed.
- 2 In the HDF File Comparison Tool GUI, click on the **File 1** button.
  - Read the Systems Description document and the Operations Manual. Both of these or their equivalent should be in the delivery.

## 26.8.2 Using the hdiff HDF File Comparison Tool

The hdiff File Comparison Tool is a text-oriented tool run from the command line. It allows comparison of two HDF or HDF-EOS files

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. Two HDF or HDF-EOS files exist with similar structures.
3. The instrument Team has delivered test output files.
4. If either of the two HDF/HDF-EOS files is in the ClearCase VOB, a ClearCase view was set before the SSIT Manager was started.

---

### Comparing two HDF or HDF-EOS Files Using the hdiff File Comparison Tool

---

- 1 From the SSIT Manager, select **T**ools→**P**roduct Examination → **F**ile Comparison → **H**DF from the menu.  
The HDF File Comparison Tool window will be displayed.
    - An xterm window running *hdiff* will be displayed.
  - 2 In the xterm window at the prompt **Options? (-h for help)**, type in any desired options then press the **Enter** key.
    - To see the list of available options, type **-h** then press the **Enter** key. to the prompt.
  - 3 In xterm window at the prompt **1<sup>st</sup> file to compare?**, type *filename1*, then press the **Enter** key.
    - The *filename1* is the file name of the first of two HDF or HDF-EOS files to be compared.
    - If *filename1* is not in the current directory (the directory from which the SSIT Manage was run), include the full path name with the file name.
  - 4 In xterm window at the prompt **2<sup>nd</sup> file to compare?**, type *filename2*, then press the **Enter** key.
    - The *filename2* is the file name of the second of two HDF or HDF-EOS files to be compared. Select another students' file.
    - If *filename2* is not in the current directory (the directory from which the SSIT Manage was run), include the full path name with the file name. The two files will be compared and the output will be displayed in the xterm window.
-

### 26.8.3 Using the ASCII File Comparison Tool

Most output files (products) from PGEs run in the DAAC will be in HDF-EOS format. A small minority may be in ASCII (text) format. The ASCII File Comparison Tool is a front-end to *xdiff* UNIX X Window tool for comparing two ASCII files.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. Two ASCII files exist and have read permissions.
3. The instrument Team has delivered test output files.
4. If either of the two ASCII files are in the ClearCase VOB, a ClearCase view was set before the SSIT Manager was started.

#### Comparing Two ASCII Files

---

- 1 From the SSIT Manager, select **T**ools→**P**roduct Examination → **F**ile Comparison → **A**SCII from the menu.  
An xterm window running *xdiff* will be displayed.
- 2 In xterm window at the prompt **1<sup>st</sup> file to compare?**, type *filename1*, then press the **Enter** key. Select a descriptor or mcf file in the directory with the PGE.  
The *filename1* is the file name of the first of two ASCII files to be compared.  
If *filename1* is not in the current directory (the directory from which the SSIT Manager was run), include the full path name with the file name.
- 3 In xterm window at the prompt **2<sup>nd</sup> file to compare?**, type *filename2*, then press the **Enter** key.  
The *filename2* is the file name of the second of two ASCII files to be compared. Select another student's corresponding file.  
If *filename2* is not in the current directory (the directory from which the SSIT Manager was run), include the full path name with the file name.  
A window labeled **xdiff** will be displayed.
- 4 In the window labeled **xdiff**, view the differences between the two files displayed.  
File *filename1* will be displayed on the left side of the window. File *filename2* will be displayed on the right.  
Only sections of file in which there are differences will be displayed. A “bang” character (!) at the beginning of a line indicates that a difference was found.  
For further help on *xdiff*, type **man xdiff**, in an xterm window then press the **Enter** key.  
Close the display window by using the pull down menu from the X window in the upper left corner.
- 5 In the xterm window at the prompt **Hit Enter for another diff, 'q <Enter>' to quit:**, type **q** press **Enter** to quit or just press **Enter** to perform another comparison.

## 26.8.4 Using the Binary File Difference Assistant

Most output files (products) from PGEs run in the DAAC will be in HDF-EOS format. A small minority may be in some binary format. The Binary File Difference Assistant aids the user in constructing code that allows comparison of binary output files. Since there is an unwieldy number of possibilities for binary file formats, this tool cannot compare two binary files without some custom code written at the DAAC, hence, the “Assistant” in the name. The Binary File Difference Assistant aids the user by generating a makefile, a driver module, and a template comparison module in C, FORTRAN 77 or IDL (Interactive Data Language). The user then edits these templates to read the particular binary format in question according to a SCF-supplied format specification.

The binary file comparison will not be performed during the SSIT training lesson.

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. Two Binary files exist and have read permissions.
3. The instrument Team has delivered test output files.
4. If either of the two Binary files are in the ClearCase VOB, a ClearCase view was set before the SSIT Manager was started.

### Comparing two Binary Files

---

- 1 From the SSIT Manager, select **Tools**→**Product Examination** → **File Comparison** → **Binary** from the menu.  
The Binary File Difference Assistant tool GUI will be displayed.
- 2 In the Binary File Difference Assistant tool GUI, click on one of the languages listed under the **Select Language** label. The choices are C, FORTRAN, or IDL.  
The choice of language depends largely on preference. It does not necessarily have to be the language that was used to create the files being compared.
- 3 Optionally, click on either the **Image** button or the **Structure** button located under the label **Compare Function**.  
Clicking on the **Image** button will display a code example for comparing binary files containing images.  
Clicking on the **Structure** button will display a code example for comparing binary files containing structures or records.  
The displayed listing well documented and should be read.  
The language of the code will depend on the language selection made in step 2.
- 4 Optionally, click on either the **Image** button or the **Structure** button located under the label **Driver**.  
Clicking on the **Image** button will display a code example for a driver invoking the compare function for binary files containing images.  
Clicking on the **Structure** button will display a code example for a driver invoking the compare function for binary files containing structures or records.

The displayed listing well documented and should be read.

The language of the code will depend on the language selection made in step 2.

**5** Optionally, click on either the **Help** button.

A Help window will be displayed.

To end help, click on the **Dismiss** button.

The Help window may remain displayed while using the Binary File Difference Assistant.

**6** Once familiar with the code examples (steps 3 and 4), click on the **Copy** button.

- A window labeled **Enter Unique ID** will be displayed.
- In the field labeled **Enter unique file identifier:**, type *fileID*, click on the **OK** button.
- The *fileID* will be used in the file names of the files copied over. These files will be:

**C:**

DaacBinDiff_ <i>fileID</i> .c	Compare function
DaacBinDiff_ <i>fileID</i> _driver.c	Driver
DaacBinDiff_ <i>fileID</i> .mak	Makefile

**FORTRAN:**

DaacBinDiff_ <i>fileID</i> .f	Compare function
DaacBinDiff_ <i>fileID</i> _driver.f	Driver
DaacBinDiff_ <i>fileID</i> .mak	Makefile

**IDL:**

DaacBinDiff_ <i>fileID</i> .pro	Compare function
DaacBinDiff_ <i>fileID</i> _driver.pro	Driver
DaacBinDiff_ <i>fileID</i> .sh	Shell script with here document

- The files will be copied into the directory from which the SSIT Manager is being run.

1. Using any desired text editor, customize the files for the job at hand. Then build the executable using the customized makefile provided (for C and FORTRAN). Then run the program to perform the binary file comparison.
-

## 26.8.5 Data Visualization

In order to view the success of science software in producing scientifically valid data sets, the data needs to be displayed in forms that convey the most information. Data visualization enables this to be done.

There are two visualization tools provided to the DAAC: EOSView and Interactive Data Language (IDL). These tools are both accessible via the SSIT Manager. EOSView is user friendly GUI for creating two-dimensional displays from HDF-EOS objects(Grid, Swath) as well as the standard HDF objects (SDS, Vdata, Image, Text). It has additional features such as thumbnail-panning, colorization, zooming, plotting, and animation. Only some aspects of data visualization will be addressed in this training material. For further information, see the related references.

IDL is a COTS display and analysis tool widely applied in the scientific community, It is used to create two-dimensional, three dimensional (volumetric), and surface/terrain displays from binary, ASCII, and many other formats in addition to HDF.

Only a limited number of file types will be available during SSIT training.

### 26.8.5.1 Data Visualization with EOSView

#### 26.8.5.1.1 Viewing Product Metadata with the EOSView Tool

This procedure describes how to use the EOSView tool to inspect the metadata in the HDF-EOS output file from a PGE. To view product metadata with the EOSView tool, execute the procedure steps that follow:

**Viewing Product Metadata \*\*\*\* The SSIT Manager does not support Data Visualization at the time of Drop 4.\*\*\*\*\* A backup example is as follows for EOSView:**

---

Log into an Algorithm and Test Tools (AITTL) environment using using a machine so configured. At the mini-daac this machine is **p0ais01**

- 1 Telnet into **p0ais01**.
- 2 **logon using your own ID and Password**
- 3 **cd /usr/ecs/TS1/CUSTOM/eosview.**
- 4 **Select EOSView, The EOSView GUI will be displayed.**
- 5 **Use the select buttons to guide you toward the view desired**

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. The output file is HDF-EOS and has been created and populated with metadata using the SDP Toolkit metadata tools.

## Viewing Product Metadata

---

- 1 From the SSIT Manager, select **Tools**→**Product Examination** → **EOSView** from the menu.
    - The EOSView GUI will be displayed.
  - 2 In the GUI labeled **EOSView - EOSView Main Window**, click on the **File** menu and select **Open**. The **Filter** GUI will be displayed.
    - In the subwindow labeled **Filter**, select the appropriate directory and file to open.
  - 3 A GUI labeled **EOSView - MyOutputFile.hdf** will be displayed where *MyOutputFile.hdf* is the file name of the file chosen in step 2. Once displayed, a list of HDF objects will appear in the main window. If nothing is listed, it means that no HDF objects were found within the file.
  - 4 In the GUI labeled **EOSView - MyOutputFile.hdf**, click on an object listed for which metadata is to be inspected. The object selected will be highlighted.
    - Do not double click on object since this will cause a **Dimension** GUI to be displayed instead.
  - 5 The global metadata associated with the object selected will be displayed in a scrollable field by clicking on the **Attributes** menu and selecting **Global** in the GUI labeled **EOSView - MyOutputFile.hdf**.
    - If instead, the message “Contains no Global Attributes” appears, then the selected object contains no global metadata.
  - 6 Repeat steps 4 and 5 for each HDF object within the selected HDF-EOS file for which metadata is to be examined.
  - 7 In the GUI labeled **EOSView - MyOutputFile.hdf**, click on the **File** menu and select **Close** to close the **EOSView - MyOutputFile.hdf** GUI.
  - 8 In the GUI labeled **EOSView - EOSView Main Window**, click on the **File** menu and select **Exit** to exit **EOSView - EOSView Main Window** GUI.
- 

### 26.8.5.1.2 Viewing HDF Image Objects

This procedure describes how to use the EOSView tool to view science Images in the HDF-EOS output file from a PGE.

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. The output file is HDF-EOS and has been created and populated with metadata using the SDP Toolkit metadata tools.
3. At least one object is an HDF image (RIS8, RIS24, *i.e.* Browse data).

### Viewing HDF Image Objects

- 
- 1 From the SSIT Manager, select **Tools**→**Product Examination** → **EOSView** from the menu.  
The EOSView GUI will be displayed.
  - 2 In the GUI labeled **EOSView - MyOutputFile.hdf**, double click on an Image object listed for which data is to be inspected.  
A GUI labeled **EOSView - Image Display Window - MyImageObject** will be displayed where *MyImageObject* is the name of the object selected.
  - 3 Optional colorization. In the GUI labeled **EOSView - Image Display Window - MyImageObject**, click on the **Palette** menu, then select one of the palettes listed: **Default, Greyscale, Antarctica, Rainbow, or World Colors**.  
This selection may be repeated until the desired palette is chosen.
  - 4 Optional zooming. In the GUI labeled **EOSView - Image Display Window - MyImageObject**, click on the **Zooming** menu, then select and then select one of the resampling methods listed: **Bilinear Interpolation** or **Nearest Neighbor**. Then click on the **Zoom In** or **Zoom Out** buttons to apply the method.
  - 5 Optional panning while zooming. In the GUI labeled **EOSView - Image Display Window - MyImageObject**, click on the **Options** menu, then select **Pan Window**, a thumbnail representation of the entire Image will be displayed in the subwindow labeled **Pan Window**. The portion of the zoomed Image shown in the main window will be the portion indicated by the hollow rectangle on the thumbnail image. Use the mouse left button to click and drag the rectangle to a new location on the thumbnail image.  
The panning option may be repeated as desired.
  - 6 To end the session with colorization, zooming, or panning, in the GUI labeled **EOSView - Image Display Window - MyImageObject**, click on the **File** menu and select **Close**.
  - 7 Optional animation. In the GUI labeled **EOSView - MyOutputFile.hdf**, click on the **Options** menu, then select **Animated images**.  
A GUI labeled **EOSView - Image Animation Window - MyOutputFile.hdf** will be displayed.  
Optionally, click on the **Options** menu select **Mode** to select how the animation is to be run. Choose **Stop at end, Continuous run, or Bounce**.  
To end animation session, click on the **File** → **Close**.
- 

### 26.8.5.1.3 Viewing HDF-EOS Grid Objects

This procedure describes how to use the EOSView tool to view science data in the HDF-EOS output file that are in HDF-EOS Grid format. These are generally the science data and not browse images.

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. The output file is HDF-EOS and has been created and populated with metadata using the SDP Toolkit metadata tools.
3. At least one object is an HDF-EOS Grid.

## Viewing HDF-EOS Grid Objects

---

- 1 From the SSIT Manager, select **Tools**→**Product Examination** → **EOSView** from the menu.  
The EOSView GUI will be displayed.
  - 2 In the GUI labeled **EOSView - MyOutputFile.hdf**, double click on an Grid object listed for which data is to be inspected. A GUI labeled **EOSView - Grid Select** will be displayed.  
Information on **Grid Information, Projection Information, Dimensions, Attributes** for the selected object can be displayed by clicking on the appropriate checkboxes.
  - 3 In the GUI labeled **EOSView - Grid Select**, click on the **Data Fields** checkbox and then click on the **OK** button. Then double click on one of the data fields listed.
    - A GUI labeled **EOSView - Grid - GridObjectName - Start/Stride/Edge** will be displayed where *GridObjectName* will be replaced by the name of the Grid object selected in step 1.
  - 4 To display the data in the form of a table of values, in the GUI labeled **EOSView - Grid - GridObjectName - Start/Stride/Edge**, click on the checkboxes for both **YDim** and **XDim** and then click on the **OK** button.
    - A GUI labeled **MyDataField** will be displayed where *MyDataField* will be replaced by the name of the data field selected in step 2.
  - 5 To display the data field in image form, in the GUI labeled **MyDataField**, click on the **File** menu and then select **Make Image**. A GUI labeled **EOSView - Swath/Grid Image** will appear,
  - 6 Optional colorization, zooming, panning while zooming can be used to obtain your desired output.
  - 3 To end the session with displaying Grid object, in the GUI labeled **EOSView - Swath/Grid**, click on the **File** menu and select **Close**. The **EOSView - Swath/Grid** GUI will disappear.
- 

### 26.8.5.1.4 Viewing HDF-EOS Swath Objects

This procedure describes how to use the EOSView tool to view science data in the HDF-EOS output file that are in HDF-EOS Swath format. These are generally the science data and not browse images.

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. The output file is HDF-EOS and has been created and populated with metadata using the SDP Toolkit metadata tools.
3. At least one object is an HDF-EOS Swath.

## Viewing HDF-EOS Swath Objects

---

- 1 From the SSIT Manager, select **T**ools→**P**roduct Examination → **E**OSView from the menu.  
The EOSView GUI will be displayed.
  - 2 In the GUI labeled **EOSView - MyOutputFile.hdf**, double click on a Swath object listed for which data is to be inspected.  
A GUI labeled **EOSView - Swath Select** will be displayed.  
Information on **D**imensions, **G**eolocation **M**appings, **I**ndexed **M**appings, **G**eolocation **F**ields, **A**tttributes for the selected Swath Object can be displayed by clicking on the corresponding checkboxes.
  - 3 In the GUI labeled **EOSView - Swath Select**, click on the **D**ata **F**ields checkbox and then click on the **O**K button. Then double click on one of the data fields listed.  
A GUI labeled **EOSView - Swath - SwathObjectName - Start/Stride/Edge** will be displayed where *SwathObjectName* will be replaced by the name of the Swath object selected in step 1.
  - 4 To display the data in the form of a table of values, in the GUI labeled **EOSView - Swath - SwathObjectName - Start/Stride/Edge**, click on the checkboxes for both **S**can**L**ine**T**ra and **P**ixels**X**trac and then click on the **O**K button.
  - 5 To display the data field in image form, in the GUI labeled **MyDataField**, click on the **F**ile menu and then select **M**ake **I**mage.  
A GUI labeled **EOSView - Swath/Grid Image** will appear.
  - 6 Optional colorization, zooming, panning while zooming features can be used in the GUI labeled **EOSView - Swath/Grid Image** to obtain your desired image.
    - To end the session with displaying Swath object, in the GUI labeled **EOSView - Swath/Grid**, click on the **F**ile → **C**lose.
- 

### 26.8.5.1.5 Viewing HDF SDS Objects

This procedure describes how to use the EOSView tool to view science data in the HDF-EOS output file that are in HDF SDS (standard HDF science data set) format. To view an HDF SDS object with the EOSView tool, execute the procedure steps that follow:

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. The output file is HDF-EOS and has been created and populated with metadata using the SDP Toolkit metadata tools.
3. At least one object is an HDF-SDS.

## Viewing HDF SDS Objects

- 
- 1 From the SSIT Manager, select **Tools**→**Product Examination** → **EOSView** from the menu.  
The EOSView GUI will be displayed.
  - 2 In the GUI labeled **EOSView - MyOutputFile.hdf**, double click on a SDS object listed for which data is to be inspected.  
A GUI labeled **EOSView - Multi-Dimension SDS** will be displayed.  
A number of checkboxes will be displayed, one for each of the dimensions in the selected SDS (there will be at least two, an X and a Y).
  - 3 In the GUI labeled **EOSView - Multi-Dimension SDS**, click on two of the dimension checkboxes and then click on the **Table** button. Then double click on one of the data fields listed.  
A GUI labeled **MySDS** will be displayed where *MySDS* will be replaced by the name of the SDS object selected in step 1.
  - 4 To display the data field in image form, in the GUI labeled **MySDS**, click on the **File** menu and then select **Make Image**.  
A GUI labeled **EOSView - Image Display Window - MySDS** will appear,
  - 5 Optional colorization, zooming, panning while zooming can be used to obtain your desired output.
  - 6 To end the session with displaying Swath object, in the GUI labeled **EOSView - Image Display Window - MySDS**, select **File** → **Close** from the menu.
    - The **EOSView - Image Display Window - MySDS** GUI will disappear.
- 

## 26.8.5.2 Data Visualization with the IDL Tool

### 26.8.5.2.1 Viewing Product Data with the IDL Tool

The following procedures describe how to use the IDL (Interactive Data Language) COTS tool to inspect the data in the output file from a PGE. These procedures are geared toward binary and ASCII formats, but can be extended to other formats supported by IDL including HDF, NetCDF, and PGE. Consult the IDL references for details on these other formats.

The major activities addresses here include creating an image display, saving an image display, creating a plot display, and saving a plot display.

The following is a list of tools, and or assumptions:

- 1.The SSIT Manager is running.
- 2.The output file is binary, ASCII, or one of the other IDL supported data formats.
- 3.IDL has been properly installed and is accessible to the user.

### Viewing Product Data with the IDL Tool

- 
- 1 From the SSIT Manager, select **T**ools→**P**roduct Examination → **I**DL from the menu. An xterm (on the AIT Sun) will be displayed within which the IDL command interpreter will be run.
  - 2 Select the procedure depending upon the activity to perform.
  - 3 To end the IDL session, close any display windows remaining, then at the IDL prompt type **quit**, then press the **Enter** key.  
The IDL session will be closed.
- 

### 26.8.5.2.2 Creating an Image Display Using IDL

The following procedure describes how to use the IDL Tool to create an image display.

The following is a list of tools, and or assumptions:

- 1.The SSIT Manager is running.
- 2.The PGE output file to be examined is of an IDL-supported type/format (if in doubt, consult the IDL Reference Guide
- 3.IDL has been properly installed and is accessible to the user.
- 4.For binary files, data is assumed to be 8-bit characters

#### Creating an Image Display Using the IDL Tool - Binary Data

---

- 1 From the SSIT Manager, select **T**ools→**P**roduct Examination → **I**DL from the menu. An xterm (on the AIT Sun) will be displayed within which the IDL command interpreter will be run.
  - 2 At the IDL prompt, type **OPENR,1,'MyBinaryFilename'**, press the **Enter** key.  
The **MyBinaryFilename** is the full path name and file name of the binary data file of known dimensions to read in.  
The single quotes (') must be included around the path/file name.  
The **1** is the logical unit number.
  - 3 At the IDL prompt, type **MyImage=BYTARR(dim1, dim2)**, press the **Enter** key.  
The **MyImage** is the name to be given to the image once created.  
The **dim1** and **dim2** are the dimensions of the input data.
  - 4 At the IDL prompt, type **READU,1,MyImage**, press the **Enter** key.
  - 5 At the IDL prompt, type **TV,MyImage**, press the **Enter** key.  
The image, **MyImage**, should then be displayed.
  - 6 At the IDL prompt, type **LOADCT,3**, press the **Enter** key.  
This command loads color table number 3. Other color tables are available
  - 7 At the IDL prompt, type **CLOSE,1**, press the **Enter** key.  
This closes logical unit 1.  
Always close logical units or an error will result the next time an access is attempted.
- 

#### Creating an Image Display Using the IDL Tool - ASCII Data

- 
- 1 From the SSIT Manager, select **Tools**→**Product Examination** → **IDL** from the menu. An xterm (on the AIT Sun) will be displayed within which the IDL command interpreter will be run.
  - 2 At the IDL prompt, type **OPENR,1,('MyASCIIfilename')**, then press the **Enter** key. The **MyASCIIfilename** is the full path name and file name of the ASCII data file of known dimensions to read in. The single quotes (') must be included around the path/file name. The **1** is the logical unit number.
  - 3 At the IDL prompt, type **MyImage=BYTARR(dim1,dim2)**, then press the **Enter** key. The **MyImage** is the name to be given to the image once created. The **dim1** and **dim2** are the dimensions of the input data.
  - 4 At the IDL prompt, type **READF,1,MyImage**, then press the **Enter** key.
  - 5 At the IDL prompt, type **TV,MyImage**, then press the **Enter** key. The image, **MyImage**, is displayed.
  - 6 At the IDL prompt, type **LOADCT,3**, then press the **Enter** key. This command loads color table number 3. Other color tables are available; refer to the IDL Reference Guide for more details.
  - 7 At the IDL prompt, type **CLOSE,1**, then press the **Enter** key. This closes logical unit 1. Always close logical units or an error will result the next time an access is attempted.
- 

### **Creating an Image Display Using the IDL Tool - PGM Data:**

---

- 1 From the SSIT Manager, select **Tools**→**Product Examination** → **IDL** from the menu. An xterm (on the AIT Sun) will be displayed within which the IDL command interpreter will be run.
  - 2 At the IDL prompt, type **READ\_PPM,"MyPGMfilename",MyImage,r,g,b**, then press the **Enter** key. The **MyPGMfilename** is the full path name and file name of the PGM formatted data file. The double quotes (") must be included around the path/file name. The **MyImage** is the name to be given to the image created.
  - 3 At the IDL prompt, type **TVLCT,r,g,b**, then press the **Enter** key. Note that r,g,b color table syntax is used for most formatted file types in IDL.
  - 4 At the IDL prompt, type **TV,MyImage**, then press the **Enter** key. The image, **MyImage**, should then be displayed.
-

### 26.8.5.2.3 Saving an Image Display Using IDL

The next procedure describes how to save an image display (once created) to either a data file or a graphic file.

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running, IDL is running
2. The PGE output file to be examined is of an IDL-supported type/format (if in doubt, consult the IDL Reference Guide)
3. For binary files, data is assumed to be 8-bit characters
4. The image display is to be saved in a binary (8-bit) or ASCII (comma-delimited characters) format.

### Save an image display using IDL - Binary Data

---

- 1 From the SSIT Manager, select **Tools**→**Product Examination** → **IDL** from the menu. An xterm (on the AIT Sun) will be displayed within which the IDL command interpreter will be run.
  - 2 At the IDL prompt, type **OPENW,1,('MyBinaryFilename.bin')**, then press the **Enter** key.  
The **MyBinaryFilename.bin** is the full path name and file name of the binary data file to write out.  
The single quotes (') must be included around the path/file name.  
The **1** is the logical unit number.
  - 3 At the IDL prompt, type **WRITEU,1,MyImage**, then press the **Enter** key.  
The **MyImage** is the name of the image to save.
  - 4 At the IDL prompt, type **CLOSE,1**, then press the **Enter** key.  
This closes logical unit 1.  
Always close logical units or an error will result the next time an access is attempted.
- 

### 26.8.5.2.4 Save an image display using IDL - ASCII Data

---

- 1 From the SSIT Manager, select **Tools**→**Product Examination** → **IDL** from the menu. An xterm (on the AIT Sun) will be displayed within which the IDL command interpreter will be run.
- 2 At the IDL prompt, type **OPENW,1,('MyASCIIfilename.asc')**, then press the **Enter** key.  
The **MyASCIIfilename.asc** is the full path name and file name of the binary data file to write out.  
The single quotes (') must be included around the path/file name.  
The **1** is the logical unit number.
- 3 At the IDL prompt, type **PRINTF,1,MyImage**, then press the **Enter** key.  
The **MyImage** is the name of the image to save.
- 4 At the IDL prompt, type **CLOSE,1**, then press the **Enter** key.

This closes logical unit 1.

Always close logical units or an error will result the next time an access is attempted.

#### 26.8.5.2.5 Save an image display using JPEG Data

1 At the IDL prompt, type

**WRITE\_JPEG,"MyJPEGfilename.jpg",MyImage**, press **Return**.

- The MyJPEGfilename.jpg is the full path name and file name of the JPEG data file to write out.

#### 26.8.5.2.6 Creating a Plot Display Using IDL

The procedures for creating a plot display are clearly described in the IDL manuals; some exceptions are clarified below.

Setting axis limits for a plot:

1 At the IDL prompt, type

**SURFACE,MyPlot,AX=70,AZ=70,xrange=[0,20],yrange=[0,20]zrange=[0,30]**, and press Return.

- The MyPlot is the IDL session variable (to which you have assigned some math function, program output, image, etc.).
- AX sets the displayed rotation about the X axis.
- AZ sets the displayed rotation about the Z axis.
- The values of xrange set the displayed portion of the X axis.
- The values of yrange set

#### **the displayed portion of the Y axis.**

- **The values of zrange set the displayed portion**

of the Z axis.

- The plot will then be displayed to the screen.

#### 26.8.5.2.7 Setting axis titles for a plot:

1 At the IDL prompt, type **SURFACE,MyPlot,AX=70,AZ=70,xtitle='this is X', ytitle='this is Y',ztitle='this is Z'**, and press Return.

- The MyPlot is the IDL session variable (to which you have assigned some math function, program output, image, etc.).
- The value of xtitle sets the displayed title of the X axis.
- The value of ytitle sets the displayed title of the Y axis.
- The value of ztitle sets the displayed title of the Z axis.
- The plot will then be displayed to the screen.

### 26.8.5.2.8 Saving a Plot Display Using IDL

Saving a displayed plot to a permanent file:

- 1 At the IDL prompt, type `MyPlotDisplay=SURFACE,MyPlot,AX=80,AZ=20`, and press Return.
  - The `MyPlotDisplay` is session name for the displayed plot of `MyPlot`.
  - The *MyPlot* is the IDL session variable (to which you have assigned some math function, program output, image, etc.).
- 2 At the IDL prompt, type `SAVE,MyPlotDisplay,4,'MyPlotOutput.ps'`, press **Return**.
  - The *MyPlotDisplay* is the session name of the plot display .
  - The *MyPlotOutput.ps* is the desired name for the saved file.
3. The SAVE option number 4 sets the output file type to PostScript (ps). There are other options, of course (consult the IDL manuals).

### 26.8.5.3 Raster Mapping Fundamentals

This procedure describes how to use the IDL Tool to perform basic raster mapping functions. These are spatial functions involving map projections, but do not include surface modeling (also called “2.5D”) or two-dimensional spectral functions.

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. IDL is running

#### 26.8.5.3.1 Raster Mapping - Global Data Set Image

---

- 1 From the SSIT Manager, select **Tools**→**Product Examination** → **IDL** from the menu. An xterm (on the AIT Sun) will be displayed within which the IDL command interpreter will be run.
- 2 At the IDL prompt, type `TV,MyImage`, then press the **Enter** key. The *MyImage* is the image name of the global image data set. The image, *MyImage*, should then be displayed.
- 3 At the IDL prompt, type `MAP_SET,/ORTHOGRAPHIC`, then press the **Enter** key. IDL also supports other map projections. Refer to IDL Reference Guide.
- 4 At the IDL prompt, type `MyNewImage=MAP_IMAGE(MyImage,startx,starty,/BILIN)`, then press the **Enter** key. The *MyNewImage* is the name to assign to the resulting image. The *MyImage* is the name of the original global image data set.
- 5 At the IDL prompt, type `TV,MyNewImage,startx,starty`, then press the **Enter** key. The image *MyNewImage* should then be displayed.
- 6 Optional overlay Lat/Long. At the IDL prompt, type `MAP_GRID`, then press the **Enter** key. This overlays Lat/Long graticule onto *MyNewImage*.
- 7 Optional overlay world coastlines. At the IDL prompt, type `MAP_CONTINENTS`, press the **Enter** key. This overlays world coastlines onto *MyNewImage*.

For a sub-global data set image, one having geocentric-LLR coordinates defined for subintervals of longitude and latitude (e.g. from -88 to -77 degrees East Longitude and 23 to 32 degrees North Latitude).

The following is a list of tools, and or assumptions:

- 1.The SSIT Manager is running.
  - 2.IDL is running
- 

#### 26.8.5.4 Raster Mapping - Sub-Global Data Set Image

---

- 1 From the SSIT Manager, select **T**ools→**P**roduct Examination → **I**DL from the menu.  
An xterm (on the AIT Sun) will be displayed within which the IDL command interpreter will be run.
  - 2 At the IDL prompt, type **TV,MyImage**, then press the **Enter** key.  
The **MyImage** is the image name of the sub-global image data set.  
The image, **MyImage**, should then be displayed.
  - 3 At the IDL prompt, type **MAP\_SET,/MERCATOR,LIMIT=[lat1,lon1,lat2,lon2]**, then press the **Enter** key.  
The **lat1**, **lon1**, **lat2**, and **lon2** specify the latitude and longitude intervals of the sub-global image data set.
  - 4 At the IDL prompt, type  
**MyNewImage=MAP\_IMAGE(MyImage,startx,starty,/BILIN.LATMIN=lat1,LATMAX=lat2,LONMIN=lon1,LONMAX=lon2)**, then press the **Enter** key.  
The **MyNewImage** is the name to assign to the resulting image.  
The **MyImage** is the name of the original global image data set.  
The **lat1**, **lon1**, **lat2**, and **lon2** specify the latitude and longitude intervals of the sub-global image data set.
  - 5 At the IDL prompt, type **TV,MyNewImage,startx,starty**, then press the **Enter** key.  
The image **MyNewImage** should then be displayed.
  - 6 Optional overlay Lat/Long. At the IDL prompt, type **MAP\_GRID**, then press the **Enter** key.  
This overlays Lat/Long graticule onto **MyNewImage**.
  - 7 Optional overlay world coastlines. At the IDL prompt, type **MAP\_CONTINENTS**, then press the **Enter** key.  
This overlays world coastlines onto **MyNewImage**.
-

## **26.9 Science Software Integration and Test (SSI&T) Release RELEASE 4.**

The process of SSI&T or integration of EOS Instrument Science Software into the ECS has been developed and refined over three iterations of ECS. IR1, the Pre-Release B Testbed and Release RELEASE 4. The latter will be the at-launch system supporting EOS-AM1 instruments. Although every attempt has been made to keep integration procedures for science software consistent through succeeding releases, basis architectural differences have led to significant variances. This section describes the architecture of the last iterations of ECS.

### **26.9.1 RELEASE 4 Architecture: Overview**

The Release RELEASE 4 architecture can be grouped into the following four categories:

- Data storage and management is provided by the Data Server Subsystem (DSS), with the functions needed to archive science data, search for and retrieve archived data, manage the archives, and stage data resources needed as input to science software or resulting as output from their execution. The Data Server Subsystem provides access to earth science data in an integrated fashion through an Application Programming Interface that is common to all layers.
- Information search and data retrieval is provided by the science user interface functions in the Client Subsystem (CLS), by information search support functions in the Data Management Subsystem (DMS), and by capabilities in the Interoperability Subsystem (IOS) which assist users in locating services and data.
- Data processing is provided by the Data Processing Subsystem (DPS) for the science software; and by capabilities for long and short term planning of science data processing, as well as by management of the production environment provided by the Planning Subsystem (PLS). Routine data processing and re-processing will occur in accordance with the established production plans. In addition ECS will provide “on-demand processing”, where higher level products are produced only when there is explicit demand for their creation.
- Data ingest is provided by the Ingest Subsystem (INS), which interfaces with external applications and provides data staging capabilities and storage for an approximately 1-year buffer of Level 0 data (so that reprocessing can be serviced from local storage).The number of external interfaces which ECS will have is potentially very large, and the interfaces can serve very diverse functions, such as high-volume ingest of level 0 data and low-volume ingest of data from field campaigns.

Table 26.9.3-1 provides procedural differences: Testbed to RELEASE 4.

#### **26.9.1.1 ECS Subsystems**

The following sub-sections provide brief overviews for each of these subsystems. More detailed discussions of their design breakdown can be found in 305-CD-020-002.

### **26.9.1.2 Client Subsystem (CLS)**

The Client provides users with an interface through which they can access ECS services and data. It also gives science software access to the ECS services, as well as direct access to ECS data. Access is provided through graphic user interface (GUI) application tools for displaying the various kinds of ECS data (e.g., images, documents, tables), and libraries representing the client APIs to ECS services. The client subsystem follows an object oriented design. The design is built around a core set of 'root' objects from which all other software will inherit its behavior.

### **26.9.1.3 Interoperability Subsystem (IOS)**

The Interoperability subsystem provides an advertising service. It maintains a database of information about the services and data offered by ECS, and provides interfaces for searching this database and for browsing through related information items. For example, ESDTs are made visible through the advertising service. The Client Subsystem provides the user interface which enables access to the IOS.

### **26.9.1.4 Data Management Subsystem (DMS)**

The Data Management subsystem provides three main functions:

- Provide end-users with a consolidated logical view of a distributed set of data repositories.
- Allow end-users to obtain descriptions for the data offered by these repositories. This also includes descriptions of attributes about the data and the valid values for those attributes.
- Provide data search and access gateways between ECS and external information systems.

### **26.9.1.5 Data Server Subsystem (DSS)**

The Data Server subsystem provides the management, cataloging, access, physical storage, distribution functions for the ECS earth science data repositories, consisting of science data and their documentation. The Data Server provides interfaces for other ECS subsystems which require access to data server services. The Data Server Subsystem consists of the following principal design components:

- Database Management System - The Data Server subsystem will use database technology to manage its catalog of earth science data, and for the persistence of its system administrative and operational data.
- Document Management System - Web server and database technology are used to implement a document management system to provide storage and information retrieval for guide documents, science software documentation, and ECS earth science related documents.
- Data Type Libraries - The Data Server will use custom dynamic linked libraries (DLLs) to provide an extensible means of implementing the variety of ECS earth

science data types and services, and will provide a consistent interface for use by other ECS subsystems requiring access to those services and data.

- File Storage Management System - This component provides archival and staging storage for data.
- Distribution System - The Data Server provides the capabilities needed to distribute bulk data via electronic file transfer or physical media.

#### **26.9.1.6 Ingest Subsystem (INS)**

This subsystem deals with the initial reception of all data received at an EOSDIS facility and triggers subsequent archiving and processing of the data. The ingest subsystem is organized into a collection of software components (e.g., ingest management software, translation tools, media handling software) from which those required in a specific situation can be readily configured. The resultant configuration is called an ingest client. Ingest clients can operate on a continuous basis to serve a routine external interface; or they may exist only for the duration of a specific ad-hoc ingest task. The ingest subsystem also standardizes on a number of possible application protocols for negotiating an ingest operation, either in response to an external notification, or by polling known data locations for requests and data.

#### **26.9.1.7 Data Processing Subsystem (DPS)**

The main components of the data processing subsystem - the science algorithms or Product Generation Executives (PGEs) - will be provided by the science teams. The data processing subsystem provides the necessary hardware resources, as well as a software environment for queuing, dispatching and managing the execution of these algorithms. The processing environment will be highly distributed and will consist of heterogeneous computing platforms. The AutoSys COTS tool is used as the scheduling engine. The tool is designed to manage production in a distributed UNIX environment. The DPS also interacts with the DSS to cause the staging and de-staging of data resources in synchronization with processing requirements.

#### **26.9.1.8 Planning Subsystem (PLS)**

The Planning Subsystem provides the functions needed to plan routine data processing, schedule on-demand processing, and dispatch and manage processing requests. The subsystem provides access to the data production schedules at each site, and provides management functions for handling deviations from the schedule to operations and science users. The Planning subsystem provides several functions to account for:

- a processing environment which eventually will be highly distributed and consist of heterogeneous computing platforms
- existence of inter-site and external data dependencies
- dynamic nature of the data and processing requirements of science algorithms
- need for high availability

- providing a resource scheduling function which can accommodate hardware technology upgrades
- support for on-demand processing (as an alternative to predominantly routine processing)
- ability to provide longer-term (e.g., monthly) processing predictions as well as short term

(e.g., daily) planning and scheduling

### **26.9.1.9 Communications Subsystem (CSS)**

The CSS helps manage the operation of distributed objects in ECS, by providing a communications environment. The environment allows software objects to communicate with each other reliably, synchronously as well as asynchronously, via interfaces that make the location of a software object and the specifics of the communications mechanisms transparent to the application.

In addition, CSS provides the infra-structural services for the distributed object environment. They are based on the Distributed Computing Environment (DCE) from the Open Software Foundation (OSF). DCE includes a number of basic services needed to develop distributed applications, such as remote procedure calls (rpc), distributed file services (DFS), directory and naming services, security services, and time services.

Finally, CSS provides a set of common facilities, which include legacy communications services required within the ECS infrastructure and at the external interfaces for file transfer, electronic mail, bulletin board and remote terminal support. The Object Services support all ECS applications with inter-process communication and specialized infra- structural services such as security, directory, time, asynchronous message passing, event logging, lifecycle service, transaction processing and World Wide Web (WWW) service.

### **26.9.1.10 Management Subsystem (MSS)**

The Management Subsystem (MSS) provides enterprise management (network and system management) for all ECS resources: commercial hardware (including computers, peripherals, and network routing devices), commercial software, and custom applications. With few exceptions, the management services will be fully decentralized, such that no single point of failure exists.

MSS provides two levels of an ECS management view: the local (site/DAAC specific) view, provided by Local System Management (LSM), and the enterprise view, provided by the Enterprise Monitoring and Coordination (EMC) at the SMC. Enterprise management relies on the collection of information about the managed resources, and the ability to send notifications to those resources. For network devices, computing platforms, and some commercial of the shelf software, MSS relies on software called “agents” which are usually located on the same device/platform and interact with the device’s or platform’s control and application software, or the commercial software product. However, a large portion of the ECS applications software is

custom developed, and some of this software - the science software - is externally supplied. For these components, MSS provides a set of interfaces via which these components can provide information to MSS (e.g., about events which are of interest to system management such as the receipt of a user request or the detection of a software failure). These interfaces also allow applications to accept commands from MSS, provided to MSS from M&O consoles (e.g., an instruction to shut down a particular component). Applications which do not interact with MSS directly will be monitored by software which acts as their “proxies”. For example, the Data Processing Subsystem (DPS) acts as the proxy for the science software it executes. DPS notifies MSS of events such as the dispatching or completion of a PGE, or its abnormal termination.

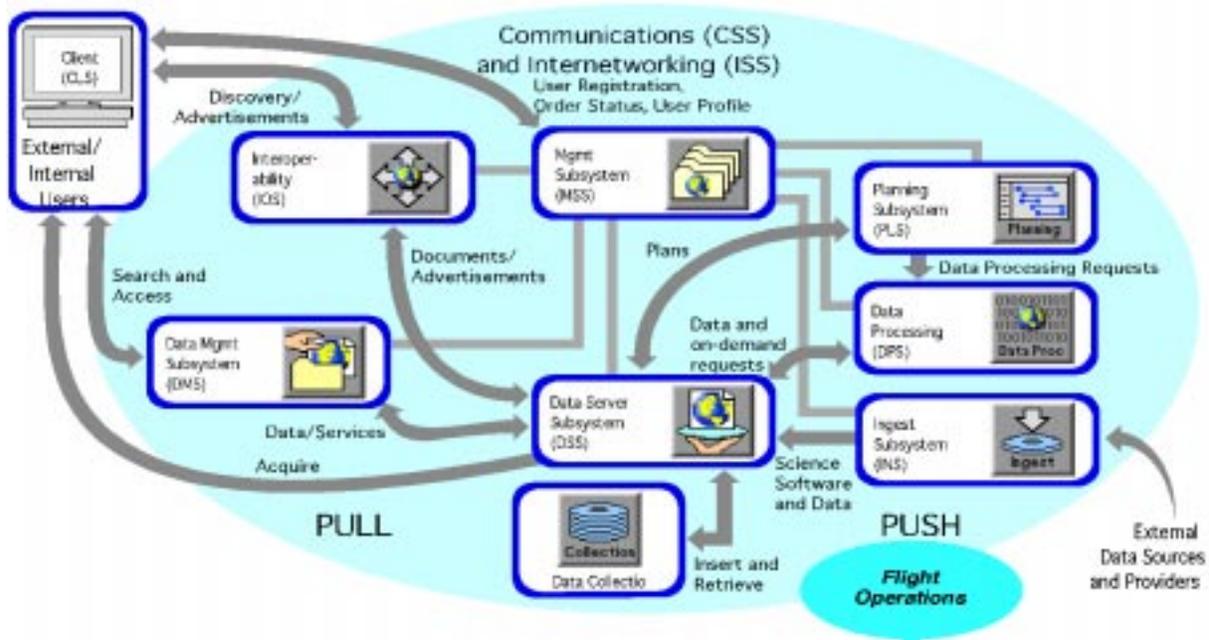
MSS uses HP OpenView as the centerpiece of its system management solution. The information collected via the MSS interfaces from the various ECS resources is consolidated into an event history database, some on a near real-time basis, some on a regular polling basis (every 15-to 30 minutes) as well as on demand, when necessitated by an operator inquiry. The database is managed by Sybase, and Sybase query and report writing capabilities will be used to extract regular and ad-hoc reports from it. Extracts and summaries of this information will be further consolidated on a system wide basis by forwarding it to the SMC (also on a regular basis).

MSS provides fault and performance management and other general system management functions such as security management (providing administration of identifications, passwords, and profiles); configuration management for ECS software, hardware, and documents; Billing and Accounting; report generation; trending; request tracking; and mode management (operational, test, simulation, etc.).

#### **26.9.1.11 Internetworking Subsystem (ISS)**

The ISS provides local area networking (LAN) services at ECS installations to interconnect and transport data among ECS resources. The ISS includes all components associated with LAN services including routing, switching, and cabling as well as network interface units and communications protocols within ECS resources.

The ISS also provides access services to link the ECS LAN services to Government-furnished wide-area networks (WANs), point-to-point links and institutional network services. Examples include the NASA Science Internet (NSI), Program Support Communications Network (PSCN), and various campus networks “adjoining” ECS installations.



**Figure 26.9.1-1. ECS Communications /Interetworking Subsystems**

**26.9.2 Implications for SSI&T Functions.**

Table 26.9.3-1 lists the major Functions that will be encountered by SSI&T staff. These architectural functions characterize the RELEASE 4 systems. The major functions are due to the presence of Ingest and Data Server Subsystems in RELEASE 4.

**Table 26.9.3.1. Major SSI&T Functions within VERSION 2.0**

<b>Function</b>		<b>Release RELEASE 4</b>
System Operation		All servers must run and communicate with each other; bring up manually, or use ECS Assist tool.
Ingest Ancillary Data Granules		Ingest GUI, ESDTs must be visible to ADV server.
ESDT Insert		Use Ingest
ESDT Verification		verify through ADV
DAP, SSAP Insert		Use Ingest
PDPS Database Population		More attributes, production rules
PGE Operation		When all data is available; DPR activated. No automatic reprocessing Complex chaining through production rules.
File Access		verify presence through ADV; ftp from SDSRV; access to multiple sites
Multi-file Granule Support		Files inserted together, accessed as a single granule.
Subscription Management		Subscription Manager

## **26.10 Using ECS Assistant to View ECS Science Data Server Database**

ESDTs and their granules stored in the archive are managed using an ECS Science Data server database. ECS Assistant provides an easy way to review the records stored in this database by using the ECS Assistant DB Viewer. There are two main windows in the DB Viewer. The first is called Collections and is used to display ESDT information included in the Collection database table. Information listed in this table includes ESDT short names, times last updated, types, etc. If an ESDT is added to the Science Data Server, its record will be shown in this window. The other window is called Granules and is used to display information included in the Granule database table. If a granule is inserted for an ESDT, the granule information will be listed in this window if its ESDT is highlighted in the Collection window. In addition to these two main

windows, this DB Viewer GUI can also show ESDT database validation rules, Product Specific Attributes, (PSA) information, and summary information about the database reviewed.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

- 1 The ECS Assistant has been properly installed.
- 2 The ECS Subsystem Manager is running.
- 3 The environment variables for using the database have been set correctly.

### 26.10.1 Starting ECS monitor GUI:

- 1 Invoke the ECS Assistant GUI.
  - The ECS Assistant GUI will be launched.
- 2 At the ECS Assistant GUI, select ESDT Manager GUI by clicking the ESDT Manager.
  - The ESDT manager GUI will appear.
- 3 At the ECS ESDT Manager GUI, select the DB Viewer by clicking the **DB Viewer** button.
  - The Database Login GUI will appear as shown in Figure 26.10-1.
  - Fill in the fields to point to the specific database for the mode used.
  - Click Login to open the DB Viewer.
  - The DB Viewer GUI will appear as shown in Figure 26.-10-2
  - ESDTs are listed in the Collections window.

DB user:  \$DSQUERY:

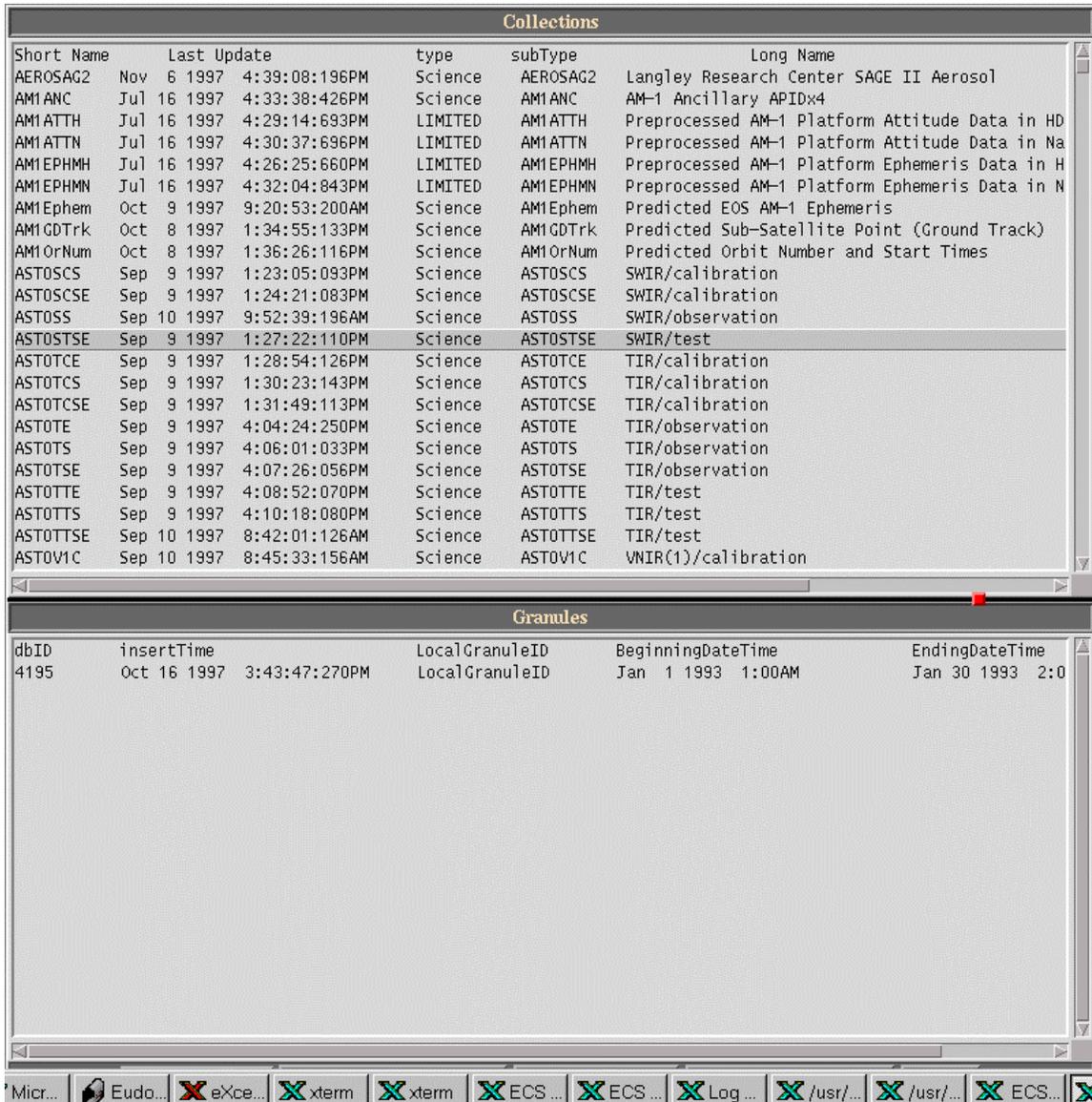
Password:  \$SYBASE:

Database name:

Fill in the three fields above, or fill in the Mode below and press Use to obtain the database info from the mode's configuration file. Then press Login. If you started with the mode as a command line argument, everything should be filled in and you can just press Login. If the values for \$SYBASE and \$DSQUERY are not right, you will need to set them in your environment and restart.

Mode:

**Figure 26.10-1. Database Login GUI**



**Figure 26.10-2. DB Viewer GUI**

- 4 To view the inserted granules for a selected ESDT, first select an ESDT by clicking its short name in the Collections window.
  - The selected ESDT is highlighted.
  - Granule information for that ESDT, if there is any, will be listed in the Granules window.
- 5 To exit, click the **EXIT** button. This will end the DB Viewer GUI.

## 26.10.2 Using ECS Assistant to View Database

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The ECS Assistant has been properly installed.
2. The ECS Subsystem Manager is running.

**To routinely start up the ECS monitor GUI, execute the procedure steps that follow:**

- 1** At the ECS **Subsystem Manager** GUI, select a mode by **clicking** a mode in the mode list.
  - The mode should be the one to be used for SSI&T.
  - Once the mode is selected, the color of the subsystem name list is changed.
- 2** Select a subsystem by **clicking** the radio button next to the subsystem name under the subsystem component window.
  - The selected subsystem radio button will be highlighted.
  - The components corresponding to that the subsystem will be displayed in the component window.
- 3** Select a component by **clicking** a component name under the component window.
  - All the servers for that selected component will be displayed in the server window.
- 4** **Click** the **monitor** button from the common tasks.
  - This will invoke the Server Monitor GUI window as shown in Figure 26.10-3.
  - The status “UP/DOWN” indicates whether the server is running.
- 5** To see which host each server running on, click the **cdsping all servers...** button.
  - This will invoke the **cdsping GUI** as indicated in Figure 26.10.4.
  - The host name for each running server is listed
- 6** Both **Server monitor GUI** and **cdsping GUI** can be updated by clicking the **update** button in the GUI.  
This will cause the list to update to the current status.
- 7** To monitor other servers, repeat steps 1-6.
- 8** To exit, click the EXIT button. This will end the monitor GUI.

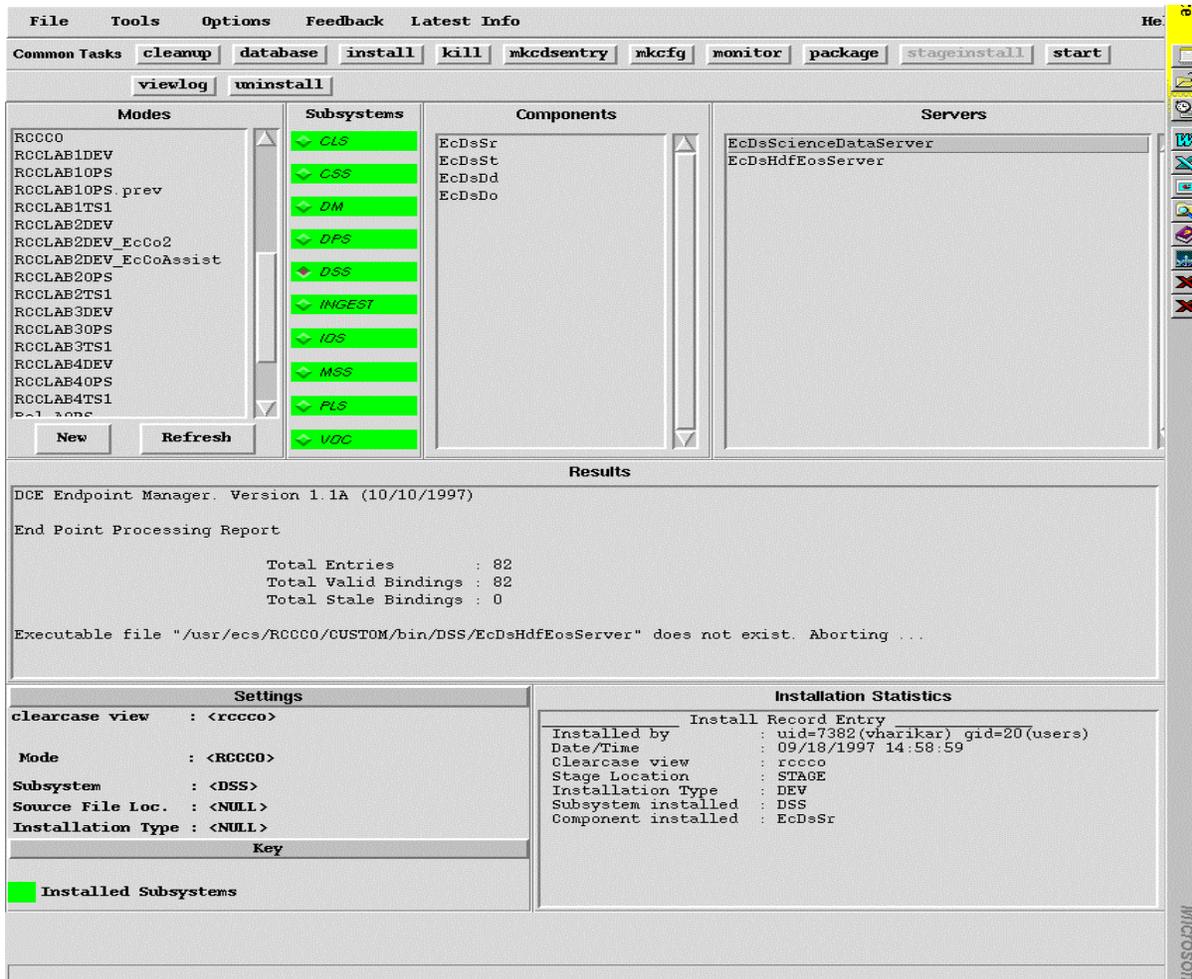
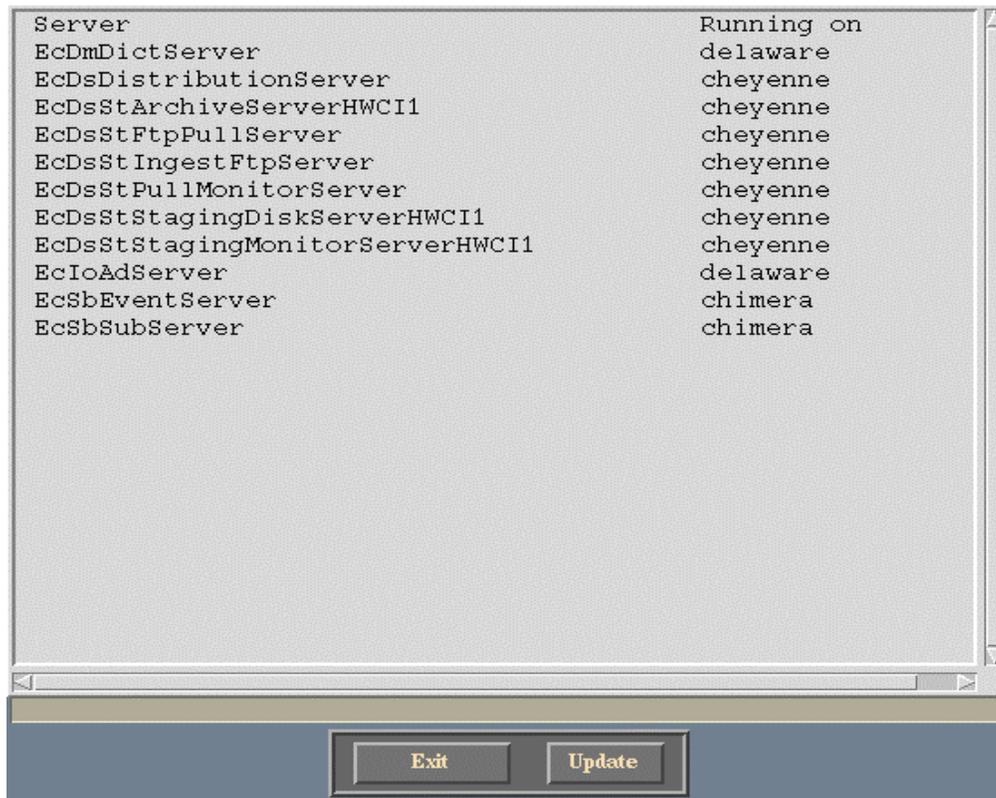


Figure 26.10-3. Server Monitor GUI



**Figure 26.10-4. cdsping GUI**

### 26.10.3 Using Browser to View ECS Science PDPS/IOS Database

Connect to the **SDSRV** database with login information as follows:

Server Name: **p0acg01\_srvr**

User Name: **sdsrvApp**

Password: **welcome**

The Browser lets you view all the tables in the **SDSRV** database with the mode you have selected.

The following tables are useful to track down the problems in insert **\*.met**:

1. DsDeDictionaryAttribute
2. DsMdAdditionalAttributes
3. DsMdCollections

#### 4. DsMdGranules

## 26.11 Installing ESDTs and Inserting Granules on the Science Data Server

### 26.11.1 Required Servers for Installing ESDT's

The following servers need to be started and running before installing ESDTs (with GDAAC machine names as examples):

- **Science Data Server (g0acs03)**
- **Storage Management Servers (g0icg01, g0drg01, g0dps02)**
- **Data Distribution Servers (g0dps02)**
- **Subscription Server (g0ins01)**
- **Advertising Server (g0ins02)**
- **Data Dictionary Server (g0ins02)**

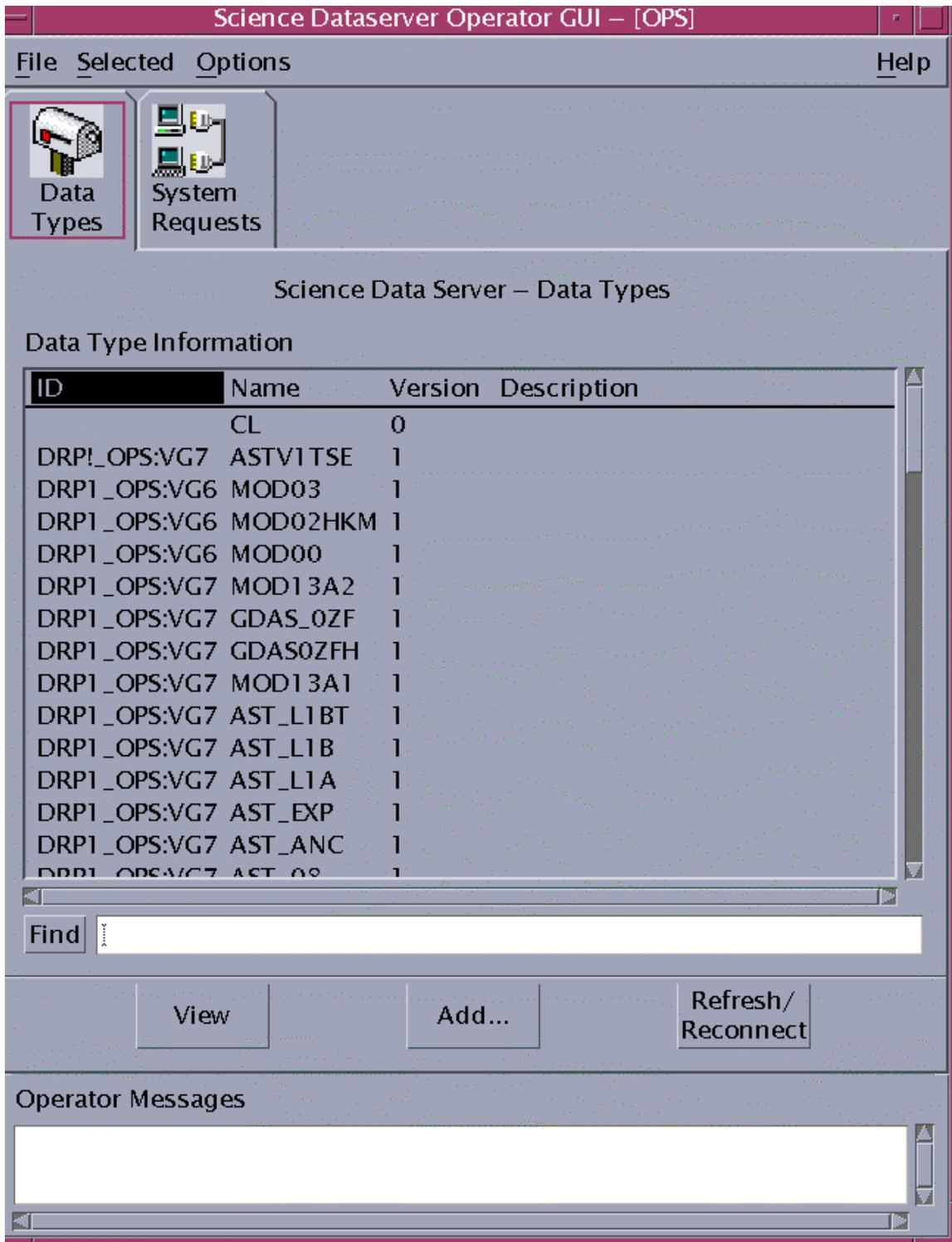
### 26.11.2. Installing/Removing (ESDT/DLL) using the Science Data Server Operator GUI

Before the ECS can process data, an Earth Science Data Type must be installed into the system via the Science Data Server (SDSRV). The ESDT allows the system to recognize a particular data type and also provides services for accessing the data in the form of a Dynamic Link Library (DLL). The following procedures give step-by-step instructions on configuring the ESDT and installing the ESDT using the Science Data Server GUI., see Figure 26.11.1. Science Dataserver Operator GUI.

#### Installing a single Earth Science Data Type (ESDT) or Dynamic Link Library (DLL)

- 1 Copy the ESDT descriptor file and ESDT/DLL file from the source directory to the directory under the current mode of operations, The ESDT descriptor files are installed in the specified mode.  
**DLL's located : /usr/ecs/<mode>/CUSTOM/lib/ESS**  
**ESDT Descriptors Located: /usr/ecs/<mode>/CUSTOM/data/ESS**
- 2 Ensure that the following servers are currently executing: **Advertising Service** on the appropriate ADSHW HWCI server machine, **Data Dictionary Service** on the appropriate DMGHW HWCI server machine, **Science Data Server** on the appropriate ACMHW HWCI server machine and the **Subscription Service** that operates on the appropriate CSS server machine.
- 3 Start the **SDSRV GUI** by entering the following at the UNIX prompt on the SDSRV GUI workstation:
  - a) telnet to (SDSRV) **p0acs03** [e.g.]

- b) login: **ID**  
password:
  - c) Login to DCE (dce\_login <name> <Password>), setenv DISPLAY .....0.0
  - d) **cd /usr/ecs/<mode>/CUSTOM/utilities/EcDsSdSrvGuiStart <mode>**
- 4 On the main screen select the **Data Types** tab. A list of the ESDTs that have already been installed on the SDSRV will be displayed.
- 5 Click the **Add** button below to bring up the **Add Data Type** window.
- 6 **Descriptor Filename:** enter path to where the ESDT/DLL is located, including the full ESDT descriptor. **Archive ID:** field. **Note:** The descriptor filename and DLL Filename will require the complete directory path name as part of the file name which is the same directory as was specified in step 1 above. **(isolate the particular Data Type from the larger List, by using a unique sequence of letters or numbers at the end of the full path to better identify the Data Types ie; /\* \_\_\_\*).** To specify specific directories, the **File..** button to the right of the Descriptor Filename and DLL Filename data entry fields will bring up a standard file selection GUI for this purpose. Also note that the **Archive ID** field will be constructed using the DSS Storage Management Staging Server UR that is found in the Science Data Server configuration file. The Science Data Server Configuration file is located in:  
**/usr/ecs/<mode>/CUSTOM/cfg/EcDsScienceDataServer.CFG.**  
Example: If the **DSSSTMGSTAGEINGSERVERUR** field was set to **DRP1\_OPS** then the **Archive ID** fields would be set to **DRP1\_OPS.**
- 7 Click the **Ok** button, this will cause the **Add Data Type** window to initiate installation of the ESDT/DLL into the Science Data Server.
- The Science Data Server GUI will respond in a short time with a window stating that **MM/DD/YY HH/MM Finished adding ESDT's.** Also, the ESDT will appear alphabetically on the **Science Data Server - Data Types** list under the **Data Types** tab.
-



**Figure 26.11.1. Science Dataserver Operator GUI.**

### 26.11.3 Granule Insert into Science Data Server

The Science Data Server subsystem includes a utility that will allow users to manually insert a data granule into the ECS. The tool will prompt the user for key inputs for The Science Data Server subsystem includes a utility that will allow users to manually insert a data granule into the ECS. The tool will prompt the user for key inputs for inserting the granule. The following procedures describe this process.

---

- 1 Ensure that the **Science Data Server** subsystem is currently executing on the appropriate ACMHW HWCI server machine. Tested on **p0acs03**.
- 2 Start the Science Data Server test utility by entering the following at the UNIX prompt on the SDSRV workstation:
  - **setenv MODE TS1**
  - **cd /usr/ecs/<mode>/CUSTOM/bin/DSS/**
  - **source ../ ../utilities/EcCoEnvCsh**
  - **/usr/ecs/<mode>/CUSTOM/bin/DSS/dttest6 ConfigFile**
  - **/usr/ecs/<mode>/CUSTOM/cfg/EcDsScienceDataServerClient.CFG**
  - **ecs\_mode <mode>**
- 3 The following selection menu is displayed:
  - **INSERT granule**
  - **INSERT granule with browse file**
  - **ACQUIRE granule with date**
  - **ACQUIRE granule with a UR**
  - **DELETE granule**
  - **Exit**

Please make selection=>

- Choose option **1** to perform the search and acquire.
- 4 The program indicates that the search process will take place first by displaying the message “**Executing insert ....** “. The user is prompted to enter the datatype of the data that will be inserted. For example:
    - Enter data type=> **AST\_L1B**
  - 5 The program will then prompt the user for the full path name of the data file. For example:
    - Enter datafile name (full path)=>**/tmp/:SC:AST\_L1BT:1391:1.EOSHDF**
  - 6 The program will then prompt the user for the full path name of the metadata file. For example: Enter data metafile name(full path)=>**/tmp/AST\_L1BT.MCF**
  - 7 The program will then give status on the success of the insert. The following messages should appear on the successful insert:
    - **Insert science data only...**
    - **Trying to make a request to {:DSSDSRV} Success.**
  - 8 The user should hit return at this prompt and the program will redisplay the first menu that was given in step 3. The user can then choose option 6 to exit.
-

#### 26.11.4 Acquire a Granule from Science Data Server

The Science Data Server subsystem includes a utility that will allow users to manually search and retrieve (acquire) a data granule from the ECS. The tool will prompt the user for key inputs for acquiring the granule. The following procedures describe this process.

##### **Acquiring a Granule from the Science Data Server**

---

- 1 Ensure that the **Science Data Server** subsystem is currently executing on the appropriate ACMHW HWCI server machine. Tested on **p0acs03**.
- 2 Start the Science Data Server test utility by entering the following at the UNIX prompt on the SDSRV workstation:
  - **setenv MODE TS1**
  - **cd /usr/ecs/<mode>/CUSTOM/bin/DSS/**
  - **source ../ ../utilities/EcCoEnvCsh**
  - **/usr/ecs/<mode>/CUSTOM/bin/DSS/dttest6 ConfigFile**
  - **/usr/ecs/<mode>/CUSTOM/cfg/EcDsScienceDataServerClient.CFG**
  - **ecs\_mode <mode>**
- 3 The following selection menu is displayed:
  - **INSERT granule**
  - **INSERT granule with browse file**
  - **ACQUIRE granule with date**
  - **ACQUIRE granule with a UR**
  - **DELETE granule**
  - **Exit**

**Please make selection=>**

  - Choose option **3** to perform the search and acquire.
- 4 The program indicates that the search process will take place first by displaying the message “**Executing search .....** “. The user is prompted to enter a hostname. Enter the hostname of the machine on which the Science Data Server process is executing:
  - Enter hostname=> **dss2**
- 5 The user is prompted to enter a data type. Enter the ESDT short name of the type of data that is to be acquired. An example:
  - Enter data type=> **AST\_LIBT**
- 6 The user is prompted to enter a start and end date. These dates indicate a range over which the user would like to search the database for data of the given type. The start and end dates will narrow the search to those data granules that were collected within that time range. Times are given in the format **mm/dd/yy**. For example:
  - Enter starting date(mm/dd/yy)=> **07/04/97**
  - Enter end date(mm/dd/yy)=> **07/05/97**
- 7 After the start and end dates are entered the utility will make a request of the Science Data Server and the following message will be displayed:
  - **Trying to make a request to [:DSSDSRV]Ä**

A table of data granules will be displayed to the user if any were found within the given time range. For example, if the user had requested to display all of the data granules for

the ESDT **AST\_L1BT** within a certain time range, the following table would be displayed:

- **UR Type Create Date Size**
- **AST\_L1BT SC:AST\_L1BT:1390**
- **AST\_L1BT SC:AST\_L1BT:1391**
- **AST\_L1BT SC:AST\_L1BT:1322**
- **AST\_L1BT SC:AST\_L1BT:1289**
- **AST\_L1BT SC:AST\_L1BT:1299**

The table displays the data type (**AST\_L1BT**) and UR (i.e., **SC:AST\_L1BT:1390**) for each granule found.

In addition to the table, a list of the granules with a corresponding numerical index will be displayed with a prompt to the user to enter the index of the granule that they wish to acquire. An example of the indexed list follows:

**NOW ENTERING ACQUIREÄ**

**There is(are)5 in the collectionÄ**

**Index = 0 AST\_L1BT SC:AST\_L1BT:1390 Index = 1 AST\_L1BTÄ**

**SC:AST\_L1BT:1391 Index = 2 AST\_L1BT SC:AST\_L1BT:1322 Index = 3Ä**

**AST\_L1BT SC:AST\_L1BT:1289 Index = 4 AST\_L1BT SC:AST\_L1BT:1299Ä**

**Please enter the index of the associated URÄ**

**8** At this time the user should enter the numerical index of the granule that they wish to acquire and hit enter.

**9** The SDSRV utility will prompt the user for a media type, the type of media on which the data will be retrieved:

- **Valid Media Types:**
- **FtpPull**
- **FtpPush**
- **8MM**
- **4MM**
- **CDROM**
- **9TRK**
- **Enter media type (case sensitive)=>**

The user should enter one of the values of the valid media types. If the user entered **FtpPush**, the user will expect the data to be ftp'd to a given directory.

**10** After the user has entered the Media type, the utility will prompt the user for the media format. The media format should be entered as "FILEFORMAT"

Enter mediaformat=> **FILEFORMAT**

**11** After the user has entered the Media format, the utility will prompt the user for the user profile id. This entry can be any alphanumeric character.

Enter userProfileID => **a**

**12** After the user has entered the user profile id, the utility will prompt the user for a user id and associated password. The user id/password will be used for authorization to perform the ftp of the data file from the archive area to the user-specified directory. The password field will not be echoed to the screen. The following is only an example. The user should use a valid user id/password within the current environment.

- Enter username=> **sdsrv**  
Enter password=>
- 13 The next entry that the user must enter is the host id of the machine to which they want the data ftp'd. Enter a valid host name as follows:  
Enter host=> **dss2**
- 14 After the host id, the user must enter the fully qualified destination directory to which the file will be ftp'd:  
Enter destination=> **/tmp**
- 15 After the destination directory has been entered, the utility will give the following message:  
**Trying to make a request to [:DSSDSRV]**  
If the acquire operation is successful, the utility will give the following message:  
**Acquire successful.**  
**Please <CR> to continue.**
- 16 The user should hit return at this prompt and the program will redisplay the first menu that was given in step 3. The user can then choose option 5 to exit.
- 

## 26.11.5 Removing ESDTs using the Command Line:

### Procedures:

---

- 1 **telnet** to (SDSRV) **p0acs03**[e.g.]  
2 login: **id**, password:  
3 *Login to DCE (dce\_login <name> <Password>), setenv DISPLAY .....:0.0*  
4 **cd dbr**  
5 **source dx.csh**  
**%dbr**  
First delete ESDT's from the Advertisement Subsystem:  
\*\*\*\*\*  
6 **rlogin p0ins02-l cmts1**  
7 *Login to DCE (dce\_login <name> <Password>), setenv DISPLAY .....:0.0*  
8 **rlogin p0ins02 -l ios**  
1. *Login to DCE (dce\_login <name> <Password>), setenv DISPLAY .....:0.0*  
10 **cd /usr/ecs/OPS/CUSTOM/utilities**  
11 **setenv MODE OPS**  
12 **source EcCoEnvCsh**  
13 **cd /usr/ecs/OPS/CUSTOM/bin/IOS**  
**ContributionDriver OPS**  
**awhitele**  
**awhitele**  
3  
2  
14 your\_short\_name\_here  
• y

```

# Success is when the "<" prompt returns
# To make sure the advertisements are deleted from the database
15   incagold% isql -Uios_role -Pwelcome -Sp0ins02_srvr
      • [If not OPS mode]
      • 1> use IoAdAdvService_MODE
        [where MODE is your mode, e.g. TS1]
      • [if OPS mode]
        1> use IoAdAdvService
        2> go
        1> select * from IoAdAdvMaster where title like "%your_short_name_here%"
        2> go

```

Result should be no rows returned.

If you do get rows returned, the delete from advertisement did not work.

\*\*\*\*\*

Then delete ESDT

\*\*\*\*\*

```

16   rlogin [p0acs03] -l id, pw:
17   Login to DCE (dce_login <name> <Password>), setenv DISPLAY .....:0.0
18   cd /usr/ecs/OPS/CUSTOM/utilities
19   EcDsSrRmesdt OPS your_short_name_here

```

# Success is no error msgs

\*\*\*\*\*

Kill servers -- AFTER WARNING EVERYONE WORKING IN YOUR MODE!

\*\*\*\*\*

20 Using ECS Assistant : # kill Sdsrv & HdfEosSrv & AdSrvr

\*\*\*\*\*

#This will clean up DCE 's. Using ECS Assistant : # Restart serversl Sdsrv & HdfEosSrv & AdSrvr

\*\*\*\*\*

- # start Sdsrv & HdfEosSrv on [p0acs03]
  - # start SubSrvr on [p0ins02]
- # (cleanup done automatically)
- sdsrv.startup OPS
  - ios-dm-mss.startup OPS

\*\*\*\*\*

Now reinstall the ESDT on SDSRV

.....

## 26.12 Production Planning Considerations

- 1 During normal operations it is expected that the Production Planner will not have to add PRs to the PDPS database very frequently. The frequency of this activity is, to some extent, determined by the SCF responsible for the science software.

- The PR is a template request to generate a particular data product and results in a production run of the associated SCF-provided PGE.
  - PR specifies a range (temporal, orbit, or tile) over which the data products are to be produced or the PGEs are to be scheduled.
  - PR might request that the data product be produced for only a single day's data.
  - PR might request that data products be produced for every opportunity of input data for several months, resulting in several hundred jobs being planned and run as the input data become available.
  - Early in a mission the SCF may prefer to request processing for a short time period only (e.g., a week or less).
  - At that time the SCF is gaining an understanding of the on-orbit behavior of the instrument, the resulting data, and the interaction of the science processing software with real data.
  - SCF reviews the quality of the products and notifies the Production Planner of the need for any changes to the PR (e.g., discontinue the PR, change time ranges, or modify input parameters).
  - When the SCF has developed a good understanding of the instrument's behavior, the team may be comfortable requesting processing for months at a time.
  - DAAC operations may have operational reasons for wanting to issue processing requests for a more limited time period.
- 2 The Production Planner has to balance the various considerations when determining whether or not to create or update a PR.
- Planning decisions are made on the basis of locally defined planning strategies for supporting the SCFs' data processing needs. The production planning tools are intended to be flexible enough in their design to support the particular planning and scheduling cycles of the operations organization at each DAAC.
- Before planning production the Production Planner must coordinate with the Resource Planner to resolve all resource allocation issues. The Resource Planner notifies the Production Planner of the resources available for use in processing. Furthermore, the Production Planner may well have direct access to the Resource Plan.
- The Production Planner prepares monthly and weekly production plans. In addition, the Production Planner develops a daily production schedule from the most current weekly plan. However, the first step in the planning process is creating production requests using the Production Request Editor.

### 26.12.1 DPREP Considerations

DPREP (data preprocessing) is a set of three PGEs that are supplied by ECS, unlike most PGEs, which are provided by the Science Computing Facilities that ECS supports. DPREP consists of the following three PGEs:

- EcDpPrAm1EdosEphAttDPREP\_PGE (Step 1).
- EcDpPrAm1FddAttitudeDPREP\_PGE (Step 2).
- EcDpPrAm1FddEphemerisDPREP\_PGE (Step 3).

The PGEs run separately and in a particular sequence.

Three files describe the PGEs and how to run them:

- “DPREP\_README”
- “HowToCreateDprepTarFile”
- “HowtoRunDPREP”

The files are installed on the science processor hosts (e.g., e0spg01, g0spg01, l0spg01, n0spg03) in the `/usr/ecs/MODE/CUSTOM/data/DPS` directory.

The DPREP PGEs process Level Zero (L0) Terra (AM-1) spacecraft data (e.g., ESDT AM1ANC) provided by EDOS. The output files/granules of the DPREP PGEs are subsequently used in the processing of data from various instruments on the satellite. They provide the following types of ancillary (non-science) data:

- Ephemeris
- Spacecraft location: ephemeris (or orbit) data include: latitude, longitude, and height.
- Attitude
- Orientation of the satellite, including yaw, pitch, and roll angles; and angular rates about three axes.
- There are two profiles for DPREP PGEs:
- Profile 1 runs routinely at the DAACs using previous DPREP output in addition to new Terra ancillary (e.g., AM1ANC) data.
- Profile 2 (the boot-up procedure) takes in the Terra ancillary data only and is run under two sets of conditions:
- First run of DPREP (because there is no previous output) to initialize DPREP processing.
- Following any long period of time during which EDOS L0 ancillary data are unavailable. (Short gaps in the ephemeris data are filled by `EcDpPrAm1EdosEphemerisRepair`, one of the executables in the `EcDpPrAm1EdosEphAttDPREP_PGE`.)

In order to run Profile 2 successfully following a long period of data unavailability, DPREP must be told where to resume orbit counting. The initial orbit number in the Step 1 process control file (PCF), must be set to the orbit number corresponding to the timestamp at which data availability resumes.

Until an automated process can be implemented, whenever there is a telemetry drop-out, a member of the DAAC science support team takes the following actions:

- Calls the Flight Operations Team (FOT).
- Asks for the on-line engineer.
- Requests the orbit number that coincides with the start time of the first L0 ancillary data set that follows the data drop-out.
- Sets the orbit number in the Step 1 PCF.

Then Profile 2 can be run successfully. Afterward, routine operations can be resumed using Profile 1 PGEs.

## 26.13 PGE Registration and Test Data Preparation

The integration of science software with ECS requires that information about the Product Generation Executives (PGEs) be made known to the PDPS in its database. In addition, the PGEs themselves and the test files that they use (both input and output) need to be placed on the Data Server. These steps must be accomplished before the science software can be run and tested within the ECS.

The following procedures describe how to register a new PGE with ECS. This involves updating the PDPS database with information needed to plan, schedule, and run the PGE. The first step in the PGE registration process is to determine which ESDTs are needed for the PGE. You must Verify that an ESDT metadata ODL file exists for each ESDT or generate an ODL file. The next step in the process is to create a PGE metadata ODL file using the delivered PCF. Finally, additional operational information (resource requirements and runtime statistics) must be input into the PDPS database. This is the last step in the PGE registration process. The order in which these procedures are done is important and should be done as indicated. Please reference Appendix C. for Examples of PGE and ESDT ODL Files for Each Instrument Team.

### 26.13.1 PGE ODL Preparation

. This section describes how to prepare PGE ODL files. It is assumed that the SSIT Manager is running .

---

- 1 From the SSIT Manager, click on the **T**ools menu, then choose **P**DPs Database and then **P**CF ODL Template.
  - An xterm with title “SSIT: Science Metadata ODL Template Creation” will be displayed.
- 2 At the program prompt **C**onfiguration File name (enter for default: *../..cfg/EcDpAtCreatODLTemplate.CFG*)?
  - Press **E**nter for the default configuration file
- 3 At the program prompt **E**Cs mode of operations?, type *mode*, press **R**eturn or just press **R**eturn if the default shown is correct.
  - The *mode* refers to the database used and will typically be **O**PS or **T**S1.
- 4 At the program prompt **P**rocess Control file name (PCF to generate template from)?, type *PCFpathname/PCFfilename*, press **R**eturn.
  - The *PCFpathname* is the full path name to the location of the PCF. If not specified, the directory from which the SSIT Manager was run will be assumed.
  - The *PCFfilename* is the file name of the PCF.
- 5 At the program prompt **P**GE name (max 10 characters)?, type *PGEname*, press **R**eturn.
  - The *PGEname* is the name of the PGE that will be registered.
- 6 At the program prompt **P**GE version (max 10 characters)?, type *PGEversion*, press **R**eturn or just press **R**eturn if the default shown is correct.
  - The *PGEversion* is the version of the PGE that will be registered.
- 7 At the prompt **P**GE Profile ID ( 0 for Null, max 999)?, type 1 or any valid profile ID.
  - After a brief time, the message “Successfully created ODL template file” should be displayed if the task was successful.

- The program will output a file with the filename **PGE\_PGEname#PGEversion#ProfileID.tpl**.
  - For example, if the PGE name was **PGE35**, and the version and profile ID were both **1** this output file will be named **PGE\_PGE35#001#01.tpl**.
- 8** At the program prompt **Hit return to run again, 'q <return>' to quit:**, press **Return** to repeat process with another PCF or type **q** and press **Return** to quit.
- The xterm will disappear.
- 9** At a UNIX prompt on an AIT Sun, type **cd SSITrunPathname**, press **Return**.
- The **SSITrunPathname** is the full path to the directory from which the SSIT Manager was run, for example **/usr/ecs/TS1/CUSTOM/bin/DPS**. This will be the directory where the file **PGE\_PGEname#PGEversion#ProfileID.tpl** will reside.
- 10** At a UNIX prompt on the AIT Sun, type **cp PGE\_PGEname#PGEversion#ProfileID.tpl PGE\_PGEname#PGEversion#ProfileID.odl**, press **Return**.
- The **PGE\_PGEname#PGEversion#ProfileID.tpl** is the file name of the ODL template file created in step 7.
  - The **PGE\_PGEname#PGEversion#ProfileID.odl** is the file name of a copy which can be safely edited. This file name convention must be used.
- 11** At a UNIX prompt on the AIT Sun, type **mv PGE\_PGEname#PGEversion#ProfileID.odl /usr/ecs/<mode>/CUSTOM/data/DPS/ODL**
- This will place the ODL file in the directory where the executable that populates the PDPS database will read from. **PGE\_PGEname#PGEversion#ProfileID.odl** is the file name of the copy created in step 10.
- 12** At a UNIX prompt on the AIT Sun, change the directory to the one in step above and type **vi PGE\_PGEname#PGEversion#ProfileID.odl**, press **Return**.
- The **PGE\_PGEname#PGEversion#ProfileID.odl** is the file name of the copy created in step 10.
  - Any text editor may be used such as *emacs*. For example, **emacs PGE\_PGE35#001#01.odl**, press **Return**.
- 13** In the file, add required metadata to the ODL template.
- For an explanation of what metadata is required, see file **/usr/ecs/<mode>/CUSTOM/data/DPS/PGE\_ODL.template**.
  - Note that the ShortNames typed into this file must each have a corresponding PDPS ESDT metadata ODL file (sec. 26.13.2).
  - All objects corresponding to output ESDTs will automatically have the **SCIENCE\_GROUP** and **YIELD** set during the generation of PGE ODL.
  - All objects corresponding to output ESDTs will have an attribute **"ASSOCIATED\_MCF\_ID**. Place here the Logical Unit Number (LUN) listed in the PCF for the associated MCF listing.
  - All objects corresponding to static input ESDTs must have the **SCIENCE\_GROUP** set. Objects corresponding to *dynamic* input ESDTs should NOT have the **SCIENCE\_GROUP** set.
  - See Appendix E for an example of PCF and corresponding PGE ODL files.
- 14** Save the changes made to the ODL template file and exit the editor.

- The specifics depend upon which editor is being used. If using *vi*, the command sequence to enter is **:wq**, press **Return**.
  - For other editors, refer to that editor's documentation.
4. If you make a mistake entering any values, press **Return** here; your previous entries are restored as defaults and you won't have to retype them.
  5. A comment should be received: **"Update of PDPS/SSIT database with PDPS SCIENCE METADATA SUCCESSFUL"**
- 

## 26.13.2 ESDT ODL Preparation

Assumption:

The PGE ODL file has been created and edited for the required PGE.

**Follow the steps below to prepare ESDT ODL files for each ESDT required by the PGE.**

---

- 1 Determine ShortName for required ESDTs corresponding to a Logical Unit Number (LUN) in the PGE ODL file.
- 2 At a UNIX prompt on an AIT Sun, type **ls /usr/ecs/<mode>/CUSTOM/data/DPS/ODL/ESDT\_*ShortName*#*Version*.odl**, press **Return**.
  - The **ESDT\_*ShortName*#*Version*.odl** is the file name of the ESDT ODL file you are looking for where *ShortName* is the ESDT's ShortName and *Version* is the ESDT version. If a file for the desired ESDT is listed, then it has already been prepared and this procedure can be exited now.
  - For example, if the desired ESDT has the ShortName MOD03 and version 001, type **ls /usr/ecs/TS1/S/CUSTOM/data/DPS/ODL/ESDT\_MOD03#001.odl**, press **Return**.
  - If the desired file is *not* listed, continue on to step 3.
- 3 At a UNIX prompt on the AIT Sun, type **cd *WorkingPathname***, press **Return**.
  - The *WorkingPathname* is the full path name to a working directory for which the user has write permissions.
  - For example, **cd /home/jdoe/working/**, press **Return**.
- 4 At a UNIX prompt on the AIT Sun, type **cp /usr/ecs/<mode>/CUSTOM/data/DPS/ESDT\_ODL.template ESDT\_*ShortName*#*Version*.odl**, press **Return**.
  - For <mode> enter the mode you are working in, for example **OPS** or **TS1**.
  - The **ESDT\_*ShortName*#*Version*.odl** is the file name of the ESDT ODL file to be created.
  - This command copies a template ESDT ODL file to the ESDT ODL file to be created. The template is well commented.
  - For example, type **cp /usr/ecs/<mode>/CUSTOM/data/DPS/ESDT\_ODL.template ESDT\_MOD03#001.odl**, press **Return**.

- The **ESDT\_ShortName#Version.odl** file naming convention *must* be observed.
- 5 At a UNIX prompt on the AIT Sun, type **vi ESDT\_ShortName#Version.odl**, press **Return**.
- The **ESDT\_ShortName#Version.odl** represents the file name of the ESDT ODL template file created in step 4.
  - Any text editor may be used such as *emacs*. For example, **emacs ESDT\_MOD03#001.odl**, press **Return**.
- 6 In the file, add required metadata to the ODL template.
- Use the internal documentation contained in the ODL file (from the original template) to aid in populating with metadata.
  - Note that the ShortName specified within the file must match the ShortName of the file name itself.
  - In addition, the ShortNames used in the PDPS PGE metadata ODL file must match the ShortNames in these files.
- 7 Save the changes made to the ESDT metadata ODL file and exit the editor.
- The specifics depend upon which editor is being used. If using *vi*, the command sequence to enter is **:wq**, press **Return**.
  - For other editors, refer to that editor's documentation.
- 8 Next type **mv ESDT\_ShortName#Version.odl /usr/ecs/<mode>/CUSTOM/data/DPS/ODL**.
- This will place the just created ESDT ODL file in the directory where PDPS will read it from.
- 9 Repeat steps 1 through 8 for each ESDT required by a particular PGE. When all ESDT metadata ODL files have been completed, continue on to next section.
- 

### 26.13.3 Update PDPS/SSIT Database with PGE Science Metadata

In order to update the PDPS Database with PGE metadata, the ESDT metadata ODL files must first be prepared for each ESDT required by the PGE. This section describes how to perform the next step, running the SSIT Science Update program.

Assumptions:

1. The SSIT Manager is running.
  2. The directory used for containing the PDPS PGE metadata ODL files. Nominally, this is **/usr/ecs/<mode>/CUSTOM/data/DPS/ODL**.
- 

### Updating the PDPS Database with PGE Metadata

The following is a list of tools, procedures and or assumptions:

The directory used for containing the PDPS ESDT metadata ODL files can be accessed by the following commands:

---

- 1 telnet to (AITT/DP) p0ais01 or a machine that matches the SSIT Manager host.
- 2 login: **ID**, password:
- 3 *Login to DCE (dce\_login <name> <Password>), setenv... :0.0*
- 4 The directory used for containing the PDPS ESDT metadata ODL files. is */usr/ecs/<mode>/CUSTOM/data/DPS/ODL*
- 5 From the SSIT Manager, click on the **T**ools menu, then choose **PDPS Database** and then **SSIT Science Metadata Update**.
  - An xterm with title “SSIT: Science Metadata Database Update” will be displayed.
- 6 At the program prompt **Configuration Filename ( enter for default: ..../cfg/EcDpAtRegisterPGE.CFG)?**
  - Press **Return**.
- 7 At the program prompt **ECS mode of operation?**, type *mode*, press **Return** or just press **Return** if the default shown is correct.
  - The *mode* refers to the database used and will typically be **OPS** or **TS1**.
- 8 At the program prompt **PGE name (max 10 characters)?**, type *PGEname*, press **Return**.
  - The *PGEname* is the name of the PGE that will be registered. This name must match the PGE name specified.
- 9 At the program prompt **PGE version (max 10 characters1)?**, type *PGEversion*, press **Return** or just press **Return** if the default shown is correct.
  - The *PGEversion* is the version of the PGE that will be registered. This version must match the PGE version specified.
- 10 At the program prompt **PGE Profile ID (0-999, 0 means null)?** Type in a valid profile ID and press **Return**, or if already listed just press **Return**.
  - The PDPS database will then be updated with the information contained in the file **PGE\_PGEname#PGEversion#ProfileID.odl**
- 11 At the program prompt **Hit return to run again, q <return> to quit:**, press **Return** to update the PDPS database with another PGE ODL metadata file or type **q** and press **Return** to quit.
  - If you make a mistake entering any values, press **Return** here; your previous entries are restored as defaults and you won't have to retype them.
  - NOTE: If you make mistakes while editing the PGE and ESDT ODL files, you can run the ODL checker (Tools → PDPS Database → Check ODL) via the SSIT manager to locate any errors.

ODL files must have been created to define the PGE to PDPS. Examples of the ODL files are under the data directory: PGE\_ODL.template, ESDT\_ODL.template, ORBIT\_ODL.template, TILE\_ODL.template and PATHMAP\_ODL. A tool can be run to generate a template ODL file for the PGE from the SSIT Manager via Tools->PDPS Database->PCF Odl Template script. This then has to be populated with all information that can not be garnered from the PCF. The CheckOdl tool from the SSIT Manager via Tools->PDPS Database-

>Check ODL can be used to flag any errors in ODL before trying to put it in the database.

### Sample of ESDT.odl files being established in ECS

home/emcleod/MODIS/STORE/PGE07

p0ais01{emcleod}10: ls

ESDT\_MD10L2#001.odl MOD\_PR10 pge\_cfg

ESDT\_MD35L2#001.odl MOD\_PR10.mk scf\_cfg

ESDT\_MOD02H#001.odl PGE07.mk script

ESDT\_MOD03#001.odl doc

p0ais01{emcleod}11: cp ESDT\_MD10L2#001.odl ESDT\_MD35L2#001.odl

ESDT\_MOD02H#001.odl ESDT\_MOD03#001.odl /usr/ecs/OPS/CUSTOM/data/DPS/ODL/

#### 26.13.3.1 AlternativeTool for SSIT Metadata Update:

Source the buildrc file for the mode in which you are working (*source .buildrc*).

*/usr/ecs/<MODE>/CUSTOM/utilities*, Note that this only has to be done once per login.

Then (*cd /usr/ecs/<MODE>/CUSTOM/bin/DPS*)

(The tool can also be executed by being in the */usr/ecs/<MODE>/CUSTOM/bin/DPS* and executing **EcDpAtDefinePGE..**)

Shell script prompts user for information.

- 1 Enter in the location of the configuration file (*.././cfg/EcDpAtRegisterPGE.CFG*).
  - 2 Filename Enter the MODE of operation (<MODE>).
  - 3 Enter name of PGE (it must match what is in the PGE ODL file).
  - 4 Enter the version of the PGE (it must match what is in the PGE ODL file).
  - 5 Enter the Profile ID (it must match what is in the PGE ODL file). Note that the ODL file for the PGE must have the of: PGE\_<PGE NAME>#<PGE VERSION>#<PROFILE ID>.
- Each ODL file is displayed as it is processed. A good status message should be displayed as a result. Information about the PGE (inputs and outputs, Production Rules, etc) should be entered in the Database.

#### 26.13.3.2 Examples of PGE and ESDT ODL Files for Each Instrument Team

This section is taken from the latest **Green Book 162-TD-001-005** and are listed in Appendix C. Depicted are examples of ODL files in SSI&T activities. Then, examples of specific ODL files are listed by instrument (ASTER, MISR or MODIS).

##### Template ODL Files

There are five Template ODL files listed therein. The specific or tailored ODL files listed were derived from these templates by appropriate editing and filling-in of values. The three ODL Template files listed reside, on the AIT Sun host, at */usr/ecs/<mode>/CUSTOM/data/DPS* . They are

PGE\_ODL.template

ESDT\_ODL.template

ORBIT\_ODL.template

PATHMAP\_ODL.template

TILE\_ODL.template

### Example of a successful PDPS Science Metadata Update:

```
PDPS/SSIT SCIENCE Metadata Database Update **
Configuration filename? (enter for default: ../../cfg/EcDpAtRegisterPGE.CFG)
ECS Mode of operations? (enter for default: OPS)
OPS
PGE name (max 10 characters)?
PGE07
PGE version (max 10 characters)?
001
PGE Profile ID (0-999, 0 means null)? (enter for default: 1)
1
Warning: Could not open message catalog "oodce.cat"
EcDpAtRegisterPGE: Process Framework: ConfigFile
../../cfg/EcDpAtRegisterPGE.CFG ecs_mode OPS
' PGE profile id = '1' ...
Do you wish to overwrite the previous PGE PGE07( (y)es or (n)o):
y
FILES PROCESSED
: PGE SCIENCE ODL file = /usr/ecs//OPS/CUSTOM/data/DPS/ODL/PGE_PGE07#0#001.odl
  ESDT SCIENCE ODL file = /usr/ecs//OPS/CUSTOM/data/DPS/ODL/ESDT_MOD02H#001.odl
  ESDT SCIENCE ODL file = /usr/ecs//OPS/CUSTOM/data/DPS/ODL/ESDT_MD35L2#001.odl
  ESDT SCIENCE ODL file = /usr/ecs//OPS/CUSTOM/data/DPS/ODL/ESDT_MOD03#001.odl
  ESDT SCIENCE ODL file = /usr/ecs//OPS/CUSTOM/data/DPS/ODL/ESDT_MD10L2#001.odl
***** Update of PDPS/SSIT database with PDPS SCIENCE metadata SUCCESSFUL *****
Hit return to run again, 'q <return>' to quit:
```

### 26.13.4 Operational Metadata

The SSIT version of the PDPS database is initialized and updated with SSIT Operational Metadata so that the Planning and Processing Subsystem can schedule and run PGEs. Here, PDPS Operational Metadata refers to PGE information which is supplied to the DAAC/SSIT Operator and may change frequently.

The operator enters this data directly into the SSIT Operational Metadata Update GUI. The program then writes the data directly to the SSIT version of the PDPS database.

Before running the SSIT Operational Metadata Update from the SSIT Manager, you must first update the PDPS with SSIT Science Metadata. In addition, to get initial PGE Performance data which will be entered into the GUI, you need to run the profiling utility, EcDpPrRusage on the PGE or have the information on profiling provided. See section 26.13.2.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The required UNIX environment variables have been set.
2. The Science metadata has been updated to the PDPS database for this PGE.

**To update the SSIT version of the PDPS database with operational metadata, execute the steps that follow:**

---

- 1 From the SSIT Manager, click on the **T**ools menu, then choose **P**DP**S** Database and then **SSIT Opnl Metadata Update**.
  - The PDPS/SSIT Database Update GUI will be displayed.
- 2 Click on the radio button labeled **NEW PGE** in the lower left quadrant.
  - The PGE that you are working on should appear in the subwindow labeled **PGE Names** along with its version number in the subwindow labeled **PGE Versions**.
- 3 In the subwindow labeled **PGE Names**, click on a PGE name. Then in the subwindow labeled **PGE Versions**, click on the PGE version for that PGE. Then click on the button labeled **EDIT**.
  - The PGE name and version will be highlighted when you click on them.
  - The page tabs **PROFILE**, **RUNTIME**, and **ESDT** will change from gray (indicating disabled) to black (indicating enabled).
  - To see the contents of PGE Metadata, click on the button labeled **DISPLAY** and then click on the button labeled **DONE**.
  - If the PGE name and/or version does not appear in the lists, it means that updating of PDPS database with PGE metadata was not successful.
- 4 Click on the **PROFILE** page tab.
  - The Profile page will be displayed.
- 5 In the fields under the label **Performance Statistics**, enter the information specified.
  - In the field labeled **Wall clock time**, enter the amount of wall clock time it takes for one execution of the PGE, in seconds. The tab **PROFILE** will change from black (indicating enabled) to red (indicating database needs to be updated by APPLY button).
  - In the field labeled **CPU time (user)**, enter the so-called *user* time of the PGE, in seconds. This value should come from profiling the PGE .
  - In the field labeled **Max memory used**, enter the maximum amount of memory used by the PGE, in megabytes (MB). This value should come from profiling the PGE .
  - In the fields labeled **Block input ops** and **Block output ops**, enter the integer number of block inputs and block outputs, respectively. These values should come from profiling the PGE .
  - In the field labeled **Swaps**, enter the integer number of page swaps from the PGE. This value should come from profiling the PGE .
  - In the field labeled **Page faults**, enter the integer number of page faults from the PGE. This value should come from profiling the PGE .
- 6 In the fields under the label **Resource Requirements**, enter the information specified.
  - In the field labeled **DISK SPACE used for PGE run**, enter the maximum amount of disk used by the PGE during execution, in megabytes (MB). Space should be allowed for the executable(s), input files, output files, ancillary files, static files,

MCFs, and the PCF. (This number should also be in the PGE metadata ODL file; yes, there is duplication here.)

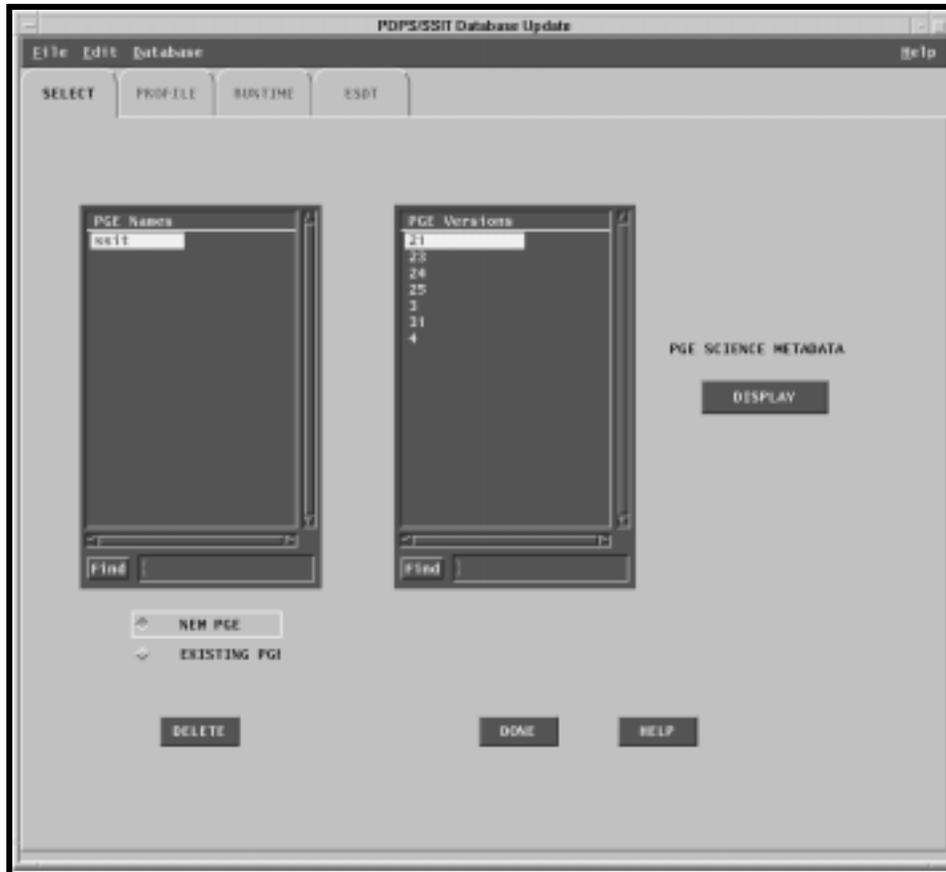
- Click on the radio button labeled **Proc. String** (if not already clicked on).
  - A list of processing strings should appear in the scrollable window to the left of the two radio buttons **Proc. String** and **Computer Name**. Nominally, only one item should be listed and should be highlighted.
  - In the field labeled **Number of CPUs**, the number 1 should appear.
- 7 Once the fields on the **PROFILE** page have been completed, click on the **APPLY** button.
- This will update the PDPS database with the information just entered. The tab **PROFILE** will change from red (indicating database needs to be updated) to black (indicating enabled).
  - An information box will be displayed; click on **Ok**.
  - To start over, click on the **RESET** button. This will clear all fields.
- 8 Click on the **File** menu and select **Exit**.
- This will end the session with PDPS/SSIT Database Update and the GUI will disappear.

### 26.13.5 SSIT Operational Metadata Update GUI

The SSIT version of the PDPS database is initialized and updated with SSIT Operational Metadata so that the Planning and Processing Subsystem can schedule and run PGEs. Here, PDPS Operational Metadata refers to PGE information which is supplied to the DAAC/SSIT Operator and may change frequently.

The operator enters this data directly into the SSIT Operational Metadata Update GUI (Figure 26.13.5-1). The program then writes the data directly to the SSIT version of the PDPS database. The SSIT Operational Metadata Update GUI is used to view or update the following operational parameters for a particular PGE:

- Performance parameters for the PGEs.
- Resource parameters for the PGEs.
- PGE user-defined static parameter.
- View the PGE science metadata file.



**Figure 26.13.5-1. SSIT Database Operational Metadata Update GUI – SELECT view**

### 26.13.6 Test Data Preparation and Insertion of Data Granules

This section describes how to prepare test data for use by registered PGEs. When PGEs are first delivered to the DAAC and registered within the PDPS, they will typically be run in isolation. That is, they will be run without any PGE dependencies. For this testing to be possible, test input data granules required by the PGE need to be pre-Inserted to the Data Server.

Data granules can be *dynamic* or *static*. Dynamic data granules are those whose temporal locality differs for each instance of the granule. Examples of dynamic granules are Level 0, Level 1, and Level 2 data sets. Static data granules are those whose temporal locality is static over long periods of time. Examples of static granules are calibration files which may only change with a new version of a PGE. For any granule to be Inserted to the Data Server, a Target MCF is needed (also known as an ASCII metadata ODL file or a .met file).

In the actual production environment, a Target MCF is produced by the PGE during execution. Thus, the data granule can be Inserted. In isolation testing of a PGE, however, the inputs needed

by it will not have been Inserted by a previous PGE in the chain. This Insertion must be done manually. The next two sections describes how to use the Source MCF for a dynamic data granule to create a Target MCF. and then describes how to do the Insert. In this way, a dynamic data granule can be Inserted to the Data Server as if a PGE had produced it.

### 26.13.6.1 Generating a Metadata Configuration File ( Source MCF)

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

- The SSIT Manager is running.
- ESDT's are installed onto the **Science Data Server**.

**To Generate the Metadata Configuration File (Source MCF) for the input and output ESDT's, execute the steps that follow.**

---

- 1** From the SSIT Manager, click on the **T**ools menu, then choose **D**ata **S**erver and then **G**et **M**CF.
  - An xterm in which EcDpAtGetMCF is running will be displayed as SSIT: Acquire MCF..
  - Alternatively, the same tool can be invoked by typing at a UNIX prompt on an AIT Sun **EcDpAtGetMCF.sh**, press **Return**.
- 2** At the program prompt **Configuration Filename (default defaultConfigFile)?**
  - Type in **.././cfg/ defaultConfigFile** and press **Return**.
  - The **defaultConfigFile** will be replaced by the full path name and file name of the default configuration file. The file name will be **EcDpAtGetMCF.CFG** where **daac** will be replaced by one of {GSFC, EDC, LARC, NSIDC}.
- 3** At the program prompt **ECS mode of operation (enter for default: defaultMode)?**, type **mode**, press **Return** or just press **Return** if the default shown is correct.
  - The **mode** refers to the database used and will typically be **TS1**.
- 4** At the program prompt **ESDT Short Name?**, type **ESDT ShortName**, press **Return**.
  - The **ESDTShortName** is the name of the ESDT that the EcDpAtGetMCF tool will use to generate the MCF.
- 5** At the program prompt **ESDT Version?**, type **ESDTversion**, press **Return** or just press **Return** if the default shown is correct.
  - The **ESDTversion** is the version of the ESDT.
- 6** At the program prompt **Directory to receive MCF (must be full path)?**, type **MCFpathname**, press **Return**.
  - The **MCFpathname** is the full path name to the location where the source MCF will be placed. For example, /home/jdoe/ssit.

- 7 To the final prompt **Hit return to run again, 'q <return> to quit:**, press **Return** to generate another Source MCF or type **q** and press **Return** to quit.
  - If you make a mistake entering any values, press **Return** here; your previous entries are restored as defaults and you won't have to retype them.

---

**Example of a successful installation of a Source MCF:**

```
Configuration filename? (enter for default: ../../cfg/EcDpAtGetMCF.CFG)
ECS Mode of operations?
OPS
ESDT Short Name?
MOD03EM
ESDT Version?
0
Directory to receive MCF? (must be full path)
/home/emcleod/MCF/
Warning: Could not open message catalog "oodce.cat"
EcDpAtGetMCF: Process Framework: ConfigFile ../../cfg/EcDpAtGetMCF.CFG
ecs_mode
OPS
incomplete group entries in the configfile,using default G1
Request for MCF successful for:
  ESDT name = 'MOD03EM'
  ESDT version = '0'
  directory = '/home/emcleod/MCF/'
Hit return to run again, 'q <return>' to quit:
```

### 26.13.7 Creating a Target MCF (.met) for a Dynamic/Static Granule

A Target MCF file for a corresponding data granule can be created based on the information provided in the Source MCF file and the involved science software package (PGE).

In standalone or isolation testing of a PGE, the inputs needed by it will not have been Inserted by a previous PGE in the chain. This Insertion must be done manually. A Target MCF file for a corresponding data granule is required to run a standalone PGE. This way a dynamic data granule can be Inserted to the Science Data Server as if a PGE had produced it.

#### 26.13.7.1 Creating a Metadata ODL File for a Static Granule

---

- 1 At the UNIX prompt on the AIT Sun, type `cd WorkingPathname`, then press the **Enter** key.
  - Example: `cd /usr/ecs/{MODE}/CUSTOM/data/DPS/ODL/`
  - The *WorkingPathname* is the full path name of the working directory containing the template metadata ODL file.
- 2 At the UNIX prompt on the AIT Sun, type `cp StaticODLmet.tpl filename.met`, then press the **Enter** key.

- The *StaticODLmet.tpl* is the file name of the template Target MCF.
  - The *filename.met* is the file name of the Target MCF for this static file. The file name extension must be .met.
  - This command will copy the template Target MCF to *filename.met*. For example, type **cp StaticODLmet.tpl CER11T.mcf.met**, then press the **Enter** key.
- 3** At a UNIX prompt on the AIT Sun, type **vi filename.met**, then press the **Enter** key.
- This command invokes the *vi* editor and reads in the Target MCF created above.
- 4** Edit the Target MCF with the specific information for the static data granule to be Inserted. The following guidelines should be followed when editing on the template MCF:
- The value for the ShortName object should be filled out with proper instrument name.
  - The value for the Version ID object should be filled out with the proper version number.
  - In the **INFORMATIONCONTENTCONTAINER** object enter the following:
    - The value for the **PARAMETERNAME** object of the class “1” should be filled out with the name of static data file.
    - The value for the **PARAMETERVALUE** object of the class “2” should be filled out based on the following guideline:
      - If the data granule is a coefficient file, a “C” followed by a numerical number n (n=1,2,...) will be used. Here n stands for the number of the coefficient file.
      - If the data granule is a MCF file, a “M” followed by a numerical number n (n=1,2,...) will be used. Here n stands for the number of the MCF file.
- 5** Save the changes made to the Target MCF (*filename.met*) and exit the editor.
- The specifics depend upon which editor is being used. If using *vi*, the command sequence to enter is **:wq**, then press the **Enter** key.
- 

### 26.13.8 Inserting Static Data Granules into the Data Server

#### Inserting a Static Data File:

- The following Servers/Services must be up and operational:
- **Science Data Server, Storage Management.**
- The following must have occurred between those Servers/Services:
- The ESDT of the static file must have been installed at the Data Server.

#### **What the user must do before trying SSIT functionality:**

---

- Create a metadata file for the static file to insert. To do this, an MCF (See “Getting an MCF in this section”) must be gotten from the Data Server for

the ESDT of the file to insert. Mandatory fields are filled into the MCF, creating a metadata file.

- If the tool is NOT run from the SSIT Manager then go to the executables directory (**cd /usr/ecs/<MODE>/CUSTOM/utilities**)
- Source the buildrc file for the mode in which you are working (source .buildrc). Note that this only has to be done once per login.
- If the tool is NOT run from the SSIT Manager then go to the executables directory (**cd /usr/ecs/<MODE>/CUSTOM/bin/DPS**)

From the **SSIT Manager** choose **Tools** menu and then **Data Server** submenu. Choose **InsertÄ Static File.Ä**

The tool can also be executed by being in the **/usr/ecs/<MODE>/CUSTOM/bin/DPS** andÄ **executing EcDpAtInsertStaticÄ**

Shell script prompts user for information.

- 1 Enter in the location of the DpAtInsertStaticFile configuration file (**././cfg/EcDpAtInsertStaticFile.CFG**).
- 2 Enter the MODE of operation (<MODE>). At the program prompt **mode (default ops)?**, or press **Enter** to take default.
- 3 Enter the short name of the ESDT (for the static file). This value is in the pdps database under the PIDataTypeMaster table and must be in the PGE ODL file.
  - At the program prompt **ESDT name?** type **ESDTShortName**, then press the **Enter** key. For example type: **MOD02LUT**.
- 4 Enter the version of the ESDT for the static file. This value is also in the pdps database under the PIDataTypeMaster table and must be in the PGE ODL file.
  - At the program prompt **PGE version (default 1)?**, type **PGEVersion**, then press the **Enter** key.
  - The **PGEVersion** must match exactly the PGE version entered into the PDPS for this PGE.
- 5 Enter the science group for this static (this will be from the ODL created during Populating the PGE information in the Database).
  - At the program prompt **Science group for Static file(one of{C,L,D,O} followed by a 3 digit number)?**, type **ScienceGroupID**, then press the **Enter** key.
  - The **ScienceGroupID** is an identifier used to define the file type as a coefficient file, a lookup table file, or a MCF. It distinguishes static granules of different types which share the same ESDT. For instance, for a coefficient file, use **Cn**, where number *n* could be 0, 1, 2...; this number *n* needs to be matched with the number *n* in the PGE\_PGENAME#Version.odl file. For an MCF. For example, type **C001**, press **Return**.
  - The Science Group ID must match what was edited into the PGE metadata ODL file for that PCF entry.
- 6 At the program prompt **Is there more than one data file for this Static (Y = Yes, N = No)? (enter for default: N)**. If there is only one data file, press **Return** and go to next step. If there are more than one data files, type **Y**, press **Return** and go to step 10.
- 7 At the program prompt **Single Static Filename to Insert (including FULL path)?**, type **pathname/GranuleFileName**, press **Return**

- The *pathname/GranuleFileName* is the full path name and file name of the static data granule to be Inserted. For example, type **/home/MODIS/PGE10/MOD\_PR28/coeff/emissivity.dat**, press **Return**.
- 8 At the program prompt **Associated ASCII Metadata Filename to Insert (including FULL path)**. Type *pathname/GranuleFileName.met*?, press **Return**.
- The *pathname/GranuleFileName.met* is the full path name and file name of the .met file for the associated static data granule to be Inserted. For example, type **/home/MODIS/PGE10/MOD\_PR28/MOD28LUT.met** press **Return**.
- 9 At the program prompt **Directory where all data files and .met file exist (FULL path)?** Type *pathname* press **Return**.
- where *pathname* is the full path of the directory where all data files and .met file exist.
  - Note for a multifile granule, the data files and .met file should be placed in the same working directory.
- 10 At the program prompt **Name of MFG file (enter to end list)?** Type in the *GranuleFileName*, one at a time and press **Return**. To end the list press **Return**.
- Where *GranuleFileName* is the names of the multifile granules.
- 11 At the program prompt **Associated ASCII Metadata Filename to Insert?** Type *GranuleFileName.met*, press **Return**.
- Where *GranuleFileName.met* is the name of one **.met file** that is used with all data granules in the even of a multifile granule.
  - The dynamic data granule will be Inserted to the Data Server. For reference, the Data Server Universal Reference (UR) will be printed on the screen.
- 12 At the program prompt **Hit return to run again, 'q <return>' to quit:** type **q** and press **Return** to quit or just press **Return** to insert additional dynamic granules.
- If continuing, repeat steps 2 through 9.

### 26.13.9 Inserting Dynamic Data Granules to the Science Data Server

In order for dynamic data files to be used both during the SSI&T and in production, this file must exist in the Data Server and be accessible by the local machine. A program called the Insert Test Dynamic File can be used for Inserting a dynamic data granule into the Data Server.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The ESDT's have been installed on the Data Server.
2. The Target MCF for this data granule has been created for the Insert.

**To Insert a dynamic granule to the Data Server, execute the following steps:**

- 1 From the SSIT Manager, click on the **T**ools menu, then choose **D**ata **S**erver and then **I**nsert **T**est **D**ynamic.
  - An xterm with title “SSIT: PGE Test Dynamic Input File Insertion” will be displayed.
- 2 At the program prompt **Configuration filename? (enter for default: ../.cfg/EcDpAtInsertTestFile.CFG)**, press **Return**.
- 3 At the program prompt **ECS Mode of operations?**
  - Type in the **<mode>** you are working in. For example, **TS1** or **OPS**. Press **Return**.
- 4 At the program prompt **ESDT short name for the file(s) to insert?** type *ESDTShortName*, press **Return**
  - The *ESDTShortName* is the ShortName of the ESDT descriptor file corresponding to this granule to be Inserted. For example, type **MOD021KM** press **Return**.
- 5 At the program prompt **ESDT Version for the file(s) to insert?** Type in the ESDT version and press **Return**.
- 6 At the program prompt **Is there more than one data file to this Dynamic Granule (Y = Yes, N = No)? (enter for default: N)?** If there are no multifiles for this ESDT, press **Return** and go to step 7. If there are more than one file for this granule go to step 9.
- 7 At the program prompt **Single Filename to Insert? (including FULL path)** type *pathname/GranuleFileName*, press
  - The *pathname/GranuleFileName* is the full path name and file name of the data granule to be Inserted. For example, type **/home/MODIS/PGE10/MOD021KM.A1996217.0014.002.hdf**, press **Return**.
- 8 At the program prompt **Associated ASCII Metadata Filename to Insert (including FULL path)** , Type *pathname/GranuleFileName.met* and press **Return**.
  - *pathname* is full name of the path and *GranuleFileName.met* is the name of the associated .met file. For example, **/home/MODIS/PGE10/MOD021KM.met**
  - The dynamic data granule will be Inserted to the Data Server. For reference, the Data Server Universal Reference (UR) will be printed on the screen.
- 9 At the program prompt **Directory where all data files and .met file exist (FULL path)?** Type *pathname* press **Return**.
 

where *pathname* is the full path of the directory where all data files and .met file exist.  
Note for a multifile granule, the data files and .met file should be placed in the same working directory.
- 10 At the program prompt **Name of MFG file (enter to end list)?** Type in the *GranuleFileName*, one at a time and press **Return**. To end the list press **Return**.
 

where *GranuleFileName* is the names of the multifile granules.
- 11 At the program prompt **Associated ASCII Metadata Filename to Insert?** Type *GranuleFileName.met*, press **Return**.
 

where *GranuleFileName.met* is the name of one .met file that is used with all data granules in the even of a multifile granule.

  - The dynamic data granule will be Inserted to the Data Server. For reference, the Data Server Universal Reference (UR) will be printed on the screen.

- 12 At the program prompt **Hit return to run again, 'q <return>' to quit:** type **q** and press **Return** to quit or just press **Return** to insert additional dynamic granules.
- If continuing, repeat steps 2 through 8.
- 

### **Example of a successful insertion of a Dynamic Input Data Granule into the Data Servers:**

PGE Test Dynamic Input File Insertion \*\*

Configuration filename? (enter for default:

../../cfg/EcDpAtInsertTestFile.CFG)

ECS Mode of operations? (enter for default: OPS)

**OPS**

ESDT name

**MOD02H**

ESDT Version (enter for default: 1)

**0**

Staged Filename to Insert? (including FULL path)

**/home/emcleod/MCF/MOD02HKM.A1997217.1730.002.hdf**

Associated ASCII Metadata Filename to Insert? (including FULL path)

**/home/emcleod/MCF/MOD02H.met**

Warning: Could not open message catalog "oodce.cat"

EcDpAtInsertTestFile: Process Framework: ConfigFile

../../cfg/EcDpAtInsertTestFile.CFG ecs\_mode OPS

incomplete group entries in the configfile,using default G1

Trying to make a request to [MDC:DSSDSRV]

incomplete group entries in the configfile, using default

Trying to make a request to [MDC:DSSDSRV]

incomplete group entries in the configfile, using default

**Insert to Data Server successful:**

ESDT Version = '0'

staged file = '/home/emcleod/MCF/MOD02HKM.A1997217.1730.002.hdf'

metadata file = '/home/emcleod/MCF/MOD02H.met'

Inserted at UR:

'UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[MDC:DSSDSRV]:16:SC:M  
OD02H:1757'

Hit return to run again, 'q <return>' to quit:

### **26.13.10 Science Server Archive Package (SSAP)**

The SSAP is used to provide a record of the science software, documentation, and other related files stored at the DAAC. The SSIT SSAP GUI provides a method for grouping required data about a PGE.

The SSAP is not to be confused with the Delivered Algorithm Package (DAP) received from the SCF. Much of what is in the DAP will make it into the SSAP. The key difference is that SSAP data is prepared after initial testing of the science software and will include data that reflects site integration as well as fixes required for performance at the DAAC.

The SSAP is made up of 2 different data types. The first data type is the Algorithm Package which contains metadata (name of the PGE, name of the instrument, date accepted, etc...) about the SSAP. The second data type is the source code, documentation, and test data which will be stored as a SSAP, with its own metadata in addition to the files. SSAP components such as a source code will be tared to retain the directory structure.

The executables and static files are stored separately from the SSAP and will have their own data types (ESDTs).

The following is a list of tools, and or assumptions:

1. The SSIT Manager is running.
2. The PGE has been successfully built with the SCF and DAAC version of the Toolkit.

### 26.13.10.1 Creating an SSAP

The following Servers/Services must be up and operational:

**Science Data Server, Storage Management.**

The following must have occurred between those Servers/Services:

*NONE.* □

#### **What the user must do before trying SSIT functionality:**

- 1 From the SSIT Manager choose **Tools** menu and then **Data Server** submenu. Choose **SSAP Editor**.  
The GUI starts. Note that it will first query Data Server for a list of SSAPs that have previously been created. This list will appear in the window at the center (if any SSAPs already exist). Current SSAP field will be blank, and only Refresh and Create buttons will be active. All three tabs (Main, Files, and Metadata) will be active.  
The SSAP GUI will be displayed.
- 2 Click on the **Create** to create a new SSAP.
  - The **Create SSAP** window appears. If no OK button is visible, resize the window such that the OK button is visible.
- 3 Enter the name of the SSAP in the first field . Enter SSAP version in the second field. Note that version has a limit of 20 characters.
- 4 Click OK and the window disappears  
On the main GUI, the SSAP created (what was entered in the step above) will appear.  
Current SSAP is now set to that value. All buttons are now active.
- 5 To set up the SSAP components, click on the **File List** tab.
  - The File List Tab displays files in the local directory to the left and files in the selected SSAP component to the right. On the bottom left is a directory listing and a method to move through the directory tree on the local machine. Delete and Reset buttons—both active – are to the right.

- 6** To select a file in the left column, click on the **File Type** button, highlight a file (or files) and click on the **Add** arrow button to add the files..  
The files selected to be added will be displayed in the right column.  
To change directories (and thus add files from other directories to the SSAP component), click on the listing in the window on the bottom left of the GUI. The “..” is to go up one directory level. A single click will move to the directory chosen and change the display to show the directories under the new current directory. Note that the list of files in the upper left window changes to show the files within the current directory.
  - 7** To add metadata for the new SSAP, select the **Metadata** tab.  
The Metadata window will be displayed.  
The Metadata Tab displays the metadata for the new SSAP. Only the Name and Version will be filled in automatically. The rest of the fields will have default information.  
While the SSAP can be submitted with the default information, it is wise to fill in valid values. To change a value:
  - 8** To change the default information, click on the **Edit Assoc Collections** button.  
The **Edit Associated Collections** window displays a list of associated collections and fields for the entry of new ShortNames and Versions.
  - 9** Enter a ShortName, and version (of the ESDT that has been installed in the Data Server) - must be eight or fewer characters. Note that the Data Server will verify if the Shortname exists.
  - 10** Enter the version (of the installed ESDT).  
Then select the **OK** button. Select **Done** to close the window.
  - 11** To save the updated metadata, click **Save** on the **Metadata** tab.
  - 12** To get back to the **Main** tab, select the **Main** tab button.
  - 13** To submit the new SSAP to the Data Server, select the **Submit** button.  
When the SSAP has been submitted, the **SSAP Successfully inserted to the Data Server** prompt will appear.
- 

### 26.12.10.2 Updating an SSAP

The following Servers/Services must be up and operational:

#### **Data Server, Storage Management.**

The following must have occurred between those Servers/Services:

An SSAP must have already been inserted to the Data Server.

What the user must do before trying SSIT functionality:

The SSAP Editor has been used to insert an SSAP to the Data Server.

What must be done via SSIT tools:

If SSAP Editor is not running, use the directions from the first 2 paragraphs of (Creating an SSAP) to bring up the SSAP GUI. Note that the added SSAP should appear in the window of the Main tab.

**If the SSAP Editor is already running, the added SSAP should appear in the window of the Main tab.**

---

- 1 Click on added SSAP in the main display.
- 2 Click on the Metadata tab to update the SSAP.  
The Metadata Tab displays the metadata for the SSAP. All fields will be set to the values entered when the SSAP was created, and the Algorithm Name field will be grayed out (because it may not be updated). If you want to create a new SSAP from the an existing one, go back to the Main tab and hit the Create With button.
- 3 Click on the Algorithm Version field (currently called Algorithm Description) and enter a new version (different from what is in the field when the tab is clicked).
- 4 Update any other fields that you wish to change. You can even add a new Associated Collection by clicking on the Assoc Collection button and following the steps described in Creating an SSAP.
- 5 Before you leave the Metadata tab, click Save to save the updated metadata.
- 6 Click on the File List tab to set up new SSAP components.  
The File List Tab displays files in the local directory to the left and files in the selected SSAP component to the right. On the bottom left is a directory listing and a method to move through the directory tree on the local machine. Delete and Reset buttons—both active—are to the right.
- 7 Click on the File Type button to select the additional SSAP component to manipulate. Choose one of the menu items.  
Select a file (or files) from the left window to add to the component.  
Click the Add Arrow button to add the files. They will appear in the right window because they are now part of that SSAP Component.  
Click Main to get back to the Main tab.  
On the Main tab:  
Click Submit to send the new SSAP to Data Server. When finished, a message should pop up that says “SSAP Successfully inserted to the Data Server”.

---

### 26.13.11 PGE Checkout

The following Servers/Services must be up and operational:

NONE.

The following must have occurred between those Servers/Services:

NONE.

What the user must do before trying SSIT functionality:

In normal SSIT (at the DAACs) the DAP would be untared, and the source code recompiled and tested.

What must be done via SSIT tools:

Since SSIT is just a calibration of various tools, there is no specific order for which they must be run. All tools can be started from the SSIT Manager and can be executed on their own.

For SparcWorks (for code analysis and debugging), choose Tools menu and then Code Analysis submenu. See SparcWorks manuals for SparcWorks operation. For various office tools, choose Tools menu and the Office Automation submenu. Choose from MS Windows (a simulator to allow the user to run Windows programs), Ghostview (a viewer), Netscape (for web access), Acrobat (for document viewing), and DDTS (for problem reporting).

For Standards checkers, choose Tools and then the Standards Checkers submenu.

FORCHECK is a COTS Fortran language checking program.

The Prohibited Function Checker will examine source code for functions that are not permitted. On Prohibited Function Gui, choose Analyze to select files to examine. Hit the Ok button once selections are made and a message at the top of the Gui will indicate if prohibited functions have been found. If prohibited functions HAVE been found, use the View button to view the source code with the prohibited call. The Help button gives further information on how to work the Gui.

The Process Control File Checker examines selected PCFs and highlights any errors. The Process Control File Gui allows the user to work through the directory structure on the local machine and select PCFs to be checked. Click the Check PCF button to check a selected PCF. Again, the Help button provides more information.

## **26.13.12 Placing the Science Software Executable (SSEP) on the Data Server**

In order to be able to run a PGE within the ECS system, the EXE TAR file has to be inserted to the Science Data Server. This tar file consists of all files needed to run a PGE, except for input data files. This includes the executables, any scripts, and the SDP Toolkit message files.

### **26.13.12.1 Assembling a Science Software Executable Package (SSEP)**

This section describes how to assemble a Science Software executables Package (SSEP) and create a corresponding Target MCF. A SSEP is a UNIX tar file which contains PGE executables and SDP Toolkit message files.

In order to Insert a PGEEXE tar file into the Science Data Server, a corresponding Target MCF (.met) must be generated before insertion. Such an ASCII metadata ODL file can be obtained by editing an existing template ODL file with the information of the specific PGE. The following procedures describe how to assemble a PGEEXE tar file and create an ASCII metadata ODL file.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. PGE executables and message files required by this PGE are available to make a SSEP.

**To create an SSEP, execute the steps that follow:**

---

- 1 At the UNIX prompt on an AIT Sun, type **mkdir *SSEPpathname***, press **Return**.
  - The *SSEPpathname* is the full path name of a *new* directory which will contain all the files to be placed into the SSEP as well as the SSEP itself.
  - It is recommended that *SSEPpathame* be named with a convention that indicates the PGE for which a SSEP will be created. For example, type **mkdir PGE35.ssep**, press **Return**.
- 2 At the UNIX prompt on the AIT Sun, type **cd *SSEPpathname***, press **Return**.
  - The *SSEPpathname* is the directory name of the new directory created in step 1.
- 3 At the UNIX prompt on the AIT Sun, type **cp *pathname/file1 pathname/file2 ... pathname/filen .***, press **Return** (note the “dot” and then space at the end of the command).
  - The *pathname/file1, pathname/file2,...pathname/filen* represents a list of path names and file names (delimited by spaces) to copy into the current directory, *SSEPpathame* (the “dot” represents the current directory and must be last in the command).
  - For example, type **cp /data/MODIS/pge/PGE35.exe /data/MODIS/mcf/mod35.mcf /data/MODIS/MOD\_13453 .**, press **Return** (note the space and then “dot” at the end of the command).
  - The files copied into this directory should be the PGE executable, any shell scripts or other executables that are part of the PGE and SDP Toolkit message files.
  - Files can be individually copied into the *SSEPpathame* directory. For example, type **cp /data/MODIS/pge/PGE35.exe .**, press **Return** (note the space and then “dot” at the end of the command). Repeat for each file needed in the SSEP for this PGE.
- 4 At the UNIX prompt on the AIT Sun, type **tar cvf *SSEPfilename.tar* \***, press **Return**.
  - The *SSEPfilename.tar* is the file name for the SSEP tar file. The file name extension .tar is recommended but not required.
  - The asterisk (\*) is a file name wildcard that represents all files in the current directory. This will place all files in the SSEP tar file.
  - Once created, the contents of the SSEP tar file can be viewed by typing **tar tvf *SSEPfilename.tar***, press **Return**.
  - Do not apply compression (*e.g.* UNIX compress or gzip) to the tar file.
- 5 At the UNIX prompt on the AIT Sun, type **cp *filename.met.tpl filename.met***, press **Return**.
  - The *filename.met.tpl* is the file name of the template Target MCF for this SSEP. If a template is not available, see Appendix D or use one used for another SSEP.
  - The *filename.met* is the file name of the Target MCF to be tailored for this SSEP.
- 6 At the UNIX prompt on the AIT Sun, type **vi *filename.met***, press **Return**.
  - The *filename.met* is the Target MCF for this SSEP.
  - This command invokes the *vi* editor. Edit the *filename.met* with the specific information for the SSEP to be inserted.
  - The following guidelines should be followed when editing on the Target MCF (*filename.met*):

- The value for the VERSIONID object should be filled out with the proper PGE version. For example: “1” .
  - In the INFORMATIONCONTENTCONTAINER object,
    - The value for the PARAMETERNAME object of the class “1” should be filled out with the PGE name. For example: “BTS”.
    - The value for the PARAMETERNAME object of the class “2” should be filled out with the PGE Science Software Version. For example: “1”.
    - The value for the PARAMETERNAME object of the class “3” should be filled out with the Platform Name. For example: “IRIX”.
    - The value for the PARAMETERNAME object of the class “4” should be filled out with the Platform Version. For example: “6.2”.
    - The value for the PARAMETERNAME object of the class “5” should be filled out with the date to perform the Insertion. For example: “970319”.
    - The value for the PARAMETERNAME object of the class “6” should be filled out with the time to perform the Insertion. For example: “14:45:00”.
- 7 Save the changes made to the SSEP’s Target MCF (*filename.met*) and exit the editor.
- The specifics depend upon which editor is being used. If using *vi*, the command sequence to enter is **:wq**, press **Return**.

For other editors, refer to that editor’s documentation

### Procedures continued

- 1 At the UNIX prompt on the AIT Sun, type **mkdir SSEPpathname** then press the **Enter** key. For example, type **mkdir MOD35.ssep**, press **Enter**.  
The *SSEPpathname* is the full path name of a *new* directory which will contain all the files to be placed into the SSEP as well as the SSEP itself.
- 2 At the UNIX prompt on the AIT Sun, type **cd SSEPpathname**, then press the **Enter** key.  
The *SSEPpathname* is the directory name of the new directory created in step 1.
- 3 At the UNIX prompt on the AIT Sun, type **cp pathname/file1 pathname/file2 ... pathname/filen .**, then press **Enter** (note the space then the “dot” at the end of the command).  
The *pathname* is the location of the files. The *file1, file2, ... filen* represents a list of file names (delimited by spaces) to copy into the current directory, *SSEPpathame* (the “dot” represents the current directory and must be last in the command). For example, type **cd /data/MODIS/pge/MOD35.pge /data/MODIS/mcf/MOD35.mcf /data/MODIS/MOD\_13453 .**, press **Enter**. (note the space then the “dot” at the end of the command).  
For the synthetic PGE, only the executable needs to be copied.
- 4 At the UNIX prompt on the AIT Sun, type **tar cvf SSEPfilename.tar \***, then press the **Enter** key.  
The *SSEPfilename.tar* is the file name for the SSEP tar file.  
The file name extension *.tar* is recommended but not required.

The asterisk (\*) is a file name wildcard that represents all files in the current directory which will place all files in the SSEP tar file.

Once created, the contents of the SSEP tar file can be viewed by typing **tar tvf SSEPfilename.tar**, then press the **Enter** key.

- 5 At the UNIX prompt on the AIT Sun, type **cp filename.met.tpl filename.met**, then press the **Enter** key.

The **filename.met.tpl** is the file name of the Target MCF for this SSEP.

For the synthetic PGE, the **met** file has already been renamed and modified for use by the student when the file was unpacked.

- 6 At the UNIX prompt on the AIT Sun, type **vi filename.met**, then press the **Enter** key.

The **filename.met.tpl** is the Target MCF for this SSEP.

- 7 Edit the **filename.met** with the specific information for the SSEP to be inserted.

The value for the **VERSIONID** object should be filled out with the proper PGE version.

In the **INFORMATIONCONTENTCONTAINER** object enter the following:

The value for the **PARAMETERNAME** object of the **class “1”** should be filled out with the PGE name. The synthetic PGE should be “userid”.

The value for the **PARAMETERNAME** object of the **class “2”** should be filled out with the PGE Science Software Version.

The value for the **PARAMETERNAME** object of the **class “3”** should be filled out with the Platform Name.

The value for the **PARAMETERNAME** object of the **class “4”** should be filled out with the Platform Version.

The value for the **PARAMETERNAME** object of the **class “5”** should be filled out with the date to perform the Insertion.

The value for the **PARAMETERNAME** object of the **class “6”** should be filled out with the time to perform the Insertion.

- 8 Save the changes made to the SSEP’s Target MCF (**filename.met**) and exit the editor.

The specifics depend upon which editor is being used. If using **vi**, the command sequence to enter is **:wq**, then press the **Enter** key.

---

### 26.13.12.2 Inserting a Science Software Executable Package onto the Data Server

. Science software, like any other data that are managed in the ECS, must be placed on the Science Data Server. A program called the Insert EXE TAR Tool can be used for Inserting a Science Software Executable Package into the Data Server.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The ESDT called PGEEEXE has been installed on the Science Data Server.

2. A Target MCF (.met) for this PGEEXE tar file has been created for the Insert.
1. The PGEEXE tar file has been created .\
2. The following Servers/Services must be up an operational:

**Science Data Server, Storage Management.**

**To Insert the SSEP to the Science Data Server, execute the steps that follow:**

- 1 From the SSIT Manager, click on the **T**ools menu, then choose **D**ata **S**erver and then **I**nsert **E**XE **T**AR.
  - An xterm with title “SSIT: PGE Executable Tar File Insertion” will be displayed.
- 2 At the program prompt **C**onfiguration filename? (enter for default: *../..../EcDpAtInsertExeTarFile.CFG*), press **R**eturn.
- 3 At the program prompt **E**C**S** mode of operations?, Type *<mode>* press **R**eturn.
  - *<mode>* can either be **O**PS or **T**S1.
- 4 At the program prompt **N**ame of PGE?, type *PGEName*, press **R**eturn.
  - The *PGEName* is the name of the PGE for which this static granule is being Inserted. For example, type **PGE01**, press **R**eturn.
  - The *PGEName* must match exactly the PGE name entered into the PDPS for this PGE.
- 5 At the program prompt **S**cience software version of PGE?, type *SSWversion*, press **R**eturn.
  - The *SSWversion* is the version of the science software which is being Inserted in this SSEP. Press **R**eturn to accept the default or enter in a version and press **R**eturn.
- 6 At the program prompt **S**taged filename to insert (including Full path)?, type *pathname/SSEPFileName*, press **R**eturn
  - The *pathname/SSEPFileName* is the full path name and file name of the SSEP tar file to be Inserted. For example, type */data/MOD35/ssep/PGE35\_1.tar*, press **R**eturn.
  - The SSEP tar file must not be compressed (*e.g.* with UNIX compress or gzip).
- 7 At the program prompt **A**ssociated ASCII metadata filename to insert (including Full Path)? *pathname/SSEPFileName.met*?, press **R**eturn.
  - The default is the file name of the granule to insert with the .met file name extension. If the default is not correct, then the file name of this file must be entered.
- 8 At the program prompt **T**op level shell filename within tar file?, type *ExecFileName*, press **R**eturn.
  - The *ExecFileName* is the file name of the top level executable or script within the SSEP tar file. It should be the same as was entered into the PDPS/SSIT Database Update GUI.
  - The SSEP will be Inserted to the Science Data Server.

- 9 At the program prompt **Hit return to run again, 'q <return>' to quit:** type **q** and press **Return** to quit or just press **Return** to insert additional dynamic granules.
- If continuing, repeat steps 3 through 8.
- 

### **Example of a successful insertion of a SSEP EXE TAR:**

#### **PGE Executable Tar File Insertion Script**

Configuration filename? (enter for default:.././cfg/EcDpAtInsertExeTarFile.CFG)

ECS Mode of operations? (enter for default: OPS)

**OPS**

Name of PGE? (enter for default: PGE07)

**PGE07**

Science software version of PGE? (enter for default: 0)

**0**

Staged filename to insert (including FULL path)? (enter for default:

**/home/emcleod/SSEP/MODPGE07.tar)**

Associated ASCII metadata filename to insert (including FULL path)? (enter for

default: **/home/emcleod/SSEP/MOD\_PR10.tar.met)**

Top level shell filename within tar file? (enter for default:

**/home/emcleod/SSEP/MOD\_PR10.exe)**

**MOD\_PR10.exe (note: this entry is done a second time)** Note: If you get **core dump**, execute using “dbx command: type in: **dbx filename .exe**. This will help isolate error message that caused core dump.

Warning: Could not open message catalog "oodce.cat"

EcDpAtInsertExeTarFile: Process Framework: ConfigFile

.././cfg/EcDpAtInsertExeTarFile.CFG ecs\_mode OPS

Performing INSERT.....

incomplete group entries in the configfile,using default G1

Trying to make a request to [MDC:DSSDSRV]

incomplete group entries in the configfile, using default

Trying to make a request to [MDC:DSSDSRV]

incomplete group entries in the configfile, using default

Insert to Data Server and PDPS database update successful for:

PGE name = 'PGE07'

Ssw version = '0'

```
ESDT = 'PGEEEXE'  
ESDT Version = '0'  
staged file = '/home/emcleod/SSEP/MODPGE07.tar'  
metadata file = '/home/emcleod/SSEP/MOD_PR10.tar.met'  
Top level shell name = 'MOD_PR10.exe'
```

Inserted at UR:

```
'UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[MDC:DSSDSRV]:14:LM:PGEEEXE:1787'
```

Hit return to run again, 'q <return>' to quit:

---

## 26.14 PGE Planning Processing and Product Retrieval

### 26.14.1 Using the Production Request Editor

When standalone tests (Run from the command line) have completed successfully and information about the PGE has been entered into the PDPS Database (through PGE registration), the PGE is ready to be run through the automated ECS PDPS environment.

To process Science data, a Production Request (PR) must be submitted to the ECS system. The Production Request Editor GUI accomplishes this function. Only one PR may be submitted at a time. A single PR is exploded by the PDPS into one or more jobs called Data Processing Requests (DPRs). The number of DPRs that are created for a single PR is determined by the number needed to cover the requested time interval, orbital extent and tile schema. Some PRs may only require one DPR.

### 26.14.2 Invoking the Production Request

Currently, the Production Request Editor is invoked from a command line script. In the future, this will be done by clicking on the icon for the PR Editor on the ECS Desktop. Once the Production Request Editor is invoked, it brings up a screen with five tabs at the top for selection (as shown in Figure 26.14.3-1). The first tab is labeled "Planning". Selection of this tab displays a list of four capabilities available for the PR Editor by selecting the other tabs at the top of the primary GUI screen: PR Edit, PR List, DPR View, and DPR List.

**\*\*\*\*\* Please be advised: Only one user per mode can be executing a DPR at a time. If more than one occurs the system will cancel the remaining DPR's. Problem discovered when chained PGE's failed to kickoff. \*\*\*\*\***

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The PGE has been registered in the PDPS Database.
2. The PGE has been successfully compiled and linked with the DAAC version of the SDP Toolkit.

3. The required servers are up and running.

**To invoke the Production Request Editor GUI, execute the procedure steps that follow:**

---

- 1 In any currently available xterm window, spawn a new session: type **xterm &**, press **Return**. Then telnet to the PLS host.
  - It is recommended that this procedure begin within a new command shell on a PLS Host.
- 2 Set the DISPLAY environment variable. At the UNIX prompt on the PLS host (e.g. **p0pls01**), type **setenv DISPLAY terminal\_id**, press **Return**.
- 3 Set the DCE environment variable. At the UNIX prompt on the PLS host (e.g. **odyssey**), type **dce\_login DCE\_user\_name DCE\_password**, press **Return**.
- 4 Set the UNIX environment variable. At the UNIX prompt on the PLS host, change to the directory where the scripts are located (e.g. **cd /usr/ecs/TS1/CUSTOM/utilities**), then
  - Type **setenv MODE mode** (e.g. **TS1**).
  - Type **source environment\_setup\_file** (e.g. **EcCoEnvCsh** for C shell users).
- 5 At the UNIX prompt on the PLS host (e.g. **odyssey**), under the directory where the scripts are located (e.g. **cd /usr/ecs/TS1/CUSTOM/utilities**), type **EcPIPRE\_IFStart mode application\_id &**, then press **Return**.
  - The **mode** is the operations mode (e.g. **TS1**).
  - The **application\_id** is a numerical number (e.g. **1**).
  - For example, type **EcPIPRE\_IFStart TS1 1 &**, press **Return**.
  - Various messages from the Production Request Editor may appear in this window as it is running. For this reason, avoid using this window for other tasks until the Production Request Editor has terminated.
- 6 In the Production Request Editor, click on one of the tabs **PR Edit**, **PR List**, **DPR View**, or **DPR List** corresponding to desired task.
  - To define a new Production Request or edit a Production Request, click on **PR Edit**. Proceed to Section **Defining a New Production Request**.
  - To review or list a Production Request, click on **PR List**.
  - To view or inspect a Data Processing Request, click on **View**.
  - To review or inspect a Data Processing Request, click on **List**.
- 7 When tasks are completed in the Production Request Editor GUI, click on the **File** menu, then choose **Exit**.
  - The Production Request Editor will disappear.
  - Refer to Section **(Troubleshooting and General Investigation)** if fail to bring up the Production Request Editor GUI.



**Figure 26.14.3-1. Production Request Editor Introductory GUI**

### 26.14.3 Defining a New Production Request

A Production Request (PR) is a request for data production of granules between a start date/time and an end date/time. A PR will explode into one or more Data Processing Requests (DPR) depending upon the time interval involved. Each DPR corresponds to the execution of a PGE. Therefore, a PR results in the execution of a PGE one or more times. Only one PGE is involved in a single Production Request.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

- The user has selected the **PR Edit** tab from the Production Request Editor .
- The PGE involved in the Production Request has been registered in the PDPS database.

On workstation **x0pls##**, at the UNIX prompt in a terminal window, type as in step 1 below your user id and password.

NOTE: The **x** in the workstation name will be a letter designating your site:

**g** = GSFC, **m** = SMC, **l** = LaRC, **e** = EDC, **n** = NSIDC, **o** = ORNL, **a** = ASF, **j** = JPL; the **##** will be an identifying two-digit number (e.g., **g0pls02** indicates a Planning Subsystem (PLS) workstation at GSFC).

Prior to the rlogin, enter **setenv DISPLAY <local\_workstation IP address>:0.0**. The **<ipaddress>** is the ip address of **x0pls##**, and **xterm** is required when entering this command on a Sun terminal.

### **To define a new Production Request, execute the procedure steps that follow:**

---

- 1 From the Production Request Editor GUI, click on the **PR Edit** tab.
  - The PR Edit page will be displayed as shown in **Figure. 26.14.3-2**.
- 2- In the field labeled **PR Name:**, enter **New** or verify that **New** is already entered as the default.
- 3- The PGE for the Production Request must be selected from a list. To do this, click on the **PGE...** button.
  - A GUI labeled **PGE Selection** will be displayed within which registered PGEs will be listed. The appropriate PGE can then be selected by clicking on it and then on the **OK** button.
  - The selected PGE will then be used to populate **Satellite Name**, **Instrument Name**, **PGE Name**, and **PGE Version** fields of the main GUI.
- 4 In the field labeled **Priority:**, enter *priority*.
  - The *priority* is the priority to be assigned to this Production Request in the range 0 through 999 with 0 being the highest priority and 999 the lowest. For example, enter **40**.
- 5- In the Production Request Editor GUI, a **Duration** option is selected automatically based on the PGE registered into the PDPS. Two options are provided:
  - **UTC Time** for time range.
  - **Orbit** for orbit number range.

- 6- In the Production Request Editor GUI, enter *StartDate* and *StartTime* in fields labeled **Begin**, respectively.
    - The *StartDate* and *Starttime* are the start date and time of the Production Request and should be entered in the mm/dd/yy and hh:mm:ss formats.
  - 7- In the case of UTC Time duration, enter *EndDate* and *EndTime* in fields labeled **End**, respectively.
    - The *Enddate* and *EndTime* are the end date and time of the Production Request and should be entered in the mm/dd/yy and hh:mm:ss formats.
  - 8- In the case of Orbit duration, enter *StartOrbit* and *EndOrbit* in fields labeled **From** and **To**, respectively.
    - The *StartOrbit* and *EndOrbit* are the orbit range of the Production Request.
  - 9 Optionally, enter *Comment* in field labeled **Comment**:.
    - This comment will be displayed whenever this Production Request is brought up and viewed.
  - 10 When Production Request is complete, click on **File** menu and select **Save As....**
    - A GUI labeled **File Selection** will be displayed.
    - In the field labeled **Selection**, enter a user-defined name to be assigned to the Production Request. Then click on the **OK** button. A message box will be displayed stating “Production Request Explosion into DPRs ok, *n* DPRs Generated”, where *n* will be the number of DPRs (e.g. a 2-hr PR time will generate 24 DPRs for the 5-min processing period). Click on the **Ok** button. A second message box stating “Write to Database of Production Request ok”; again click **Ok**.

Note that you will not be allowed to enter a PR name that already exists. PR names that already exist will be displayed in the main window. The Production Request will then be saved under the name specified.

    - Refer to Section (Troubleshooting and General Investigation) if fail to generate the DPRs.
  - 11- When tasks are completed with the Production Request Editor GUI, click on the **File** menu, then choose **Exit**.
    - The Production Request Editor GUI will disappear.
-

File Edit Help

Planning PR Edit PR List DPR View DPR List

Production Request Identification

PR Name:  Origination Date:

PR Type:  Originator:

Priority:

Request Definition

Satellite Name:  PGE ...

Instrument Name:  PGE Parameters...

PGE Name:  Metadata Checks...

PGE Version:  Alternate Input Values..

Profile Id:

Duration  UTC Time  Orbit

Begin  /  /  -  :  :

End  /  /  -  :  :

From

To

Tile Id

Intermittent DPR Skip  Keep   SkipFirst

Comment:

Status:

**Figure 26.14.3-2. Production Request Editor GUI(Planning)**

### 26.14.4 Processing

Once a candidate plan has been activated, each of the DPRs will result in subscriptions to the Data Server for the data needed. A request will go to the Data Server asking for notification when the required input data arrives.

Planning knows what data to request from the Data Server because the PDPS database stores this information as determined by the ESDT for each PGE. When the Data Server receives new data, it routinely checks to see if there are any outstanding subscriptions. If there are subscriptions, Planning will be notified. Once the input data required by a DPR becomes available, the DPR can be queued for processing.

**Staging** - The Data Processing Subsystem requests that the required input data, PGE (binary executables and shell scripts) and SDP Toolkit files be placed on a disk set aside for processing.

**Process Control File (PCF)** - establishes a linkage between logical Ids that the science software uses and the physical files that exist on the staging disk.

After the PGE has completed, the DPS will deallocate resources.

A Production History file will be created and will contain information concerning the conditions that the data products were generated by the PGE.

#### 26.14.4.1 Viewing Production Requests

A Production Request (PR) is a request for data production of granules between a start date/time and an end date/time. A PR will explode into one or more Data Processing Requests (DPR) depending upon the time interval involved. Each DPR corresponds to the execution of a PGE. Therefore, a PR results in the execution of a PGE one or more times. Only one PGE is involved in a single Production Request.

This procedure describes how to view PRs that have already been defined . It assumes that the **PR List** tab has been selected from the Production Request Editor.

The information listed for each PR is:

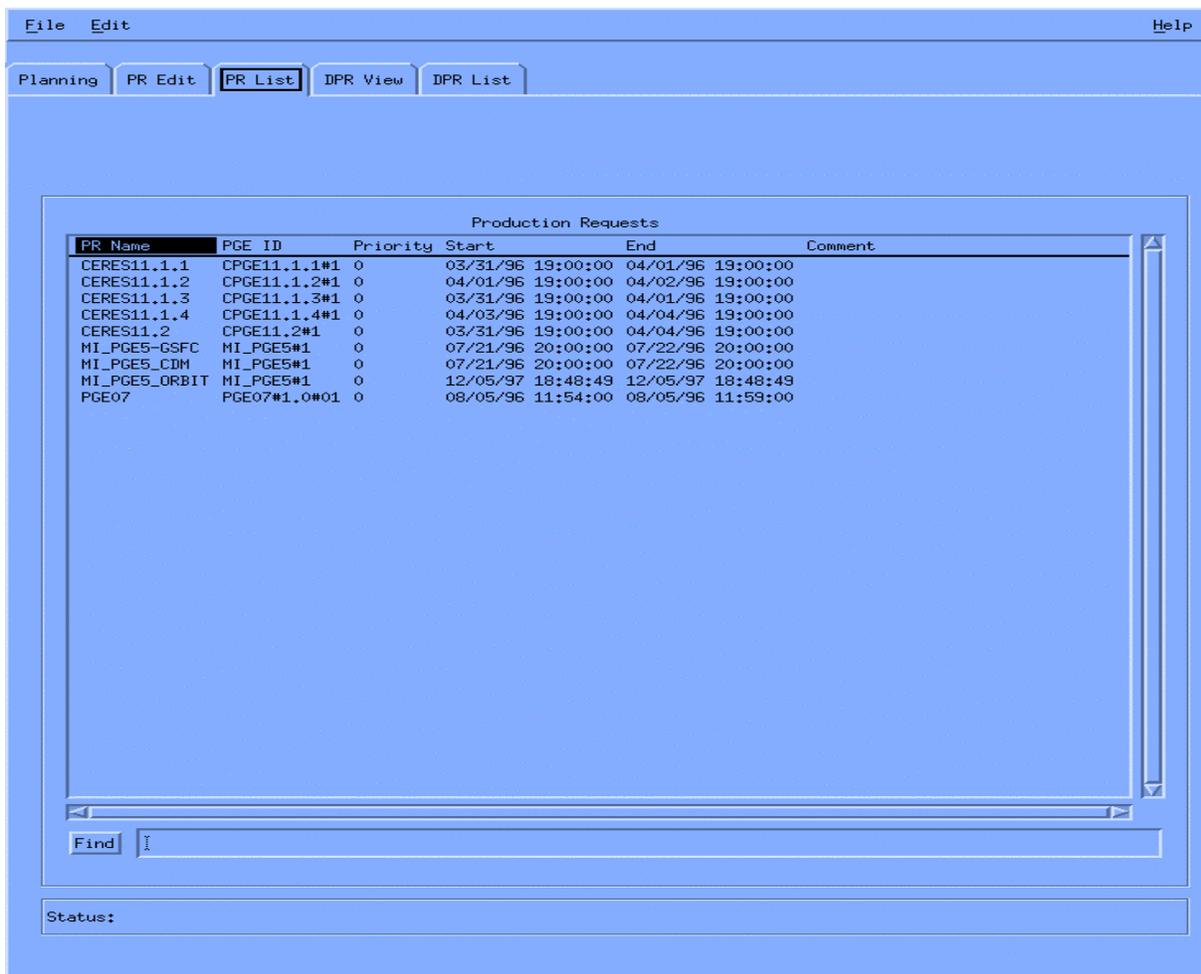
- PR Name - The name assigned to the Production Request when it was defined.
- PGE ID - The name of the PGE involved in the PR.
- Priority - The priority (0 - 99) of the PR assigned when it was defined.
- Start - The start date and time of the PR.
- End - The end date and time of the PR.
- Comment - Any comment that was entered when the PR was defined.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The user has selected the **PR List** tab from the Production Request Editor.
- 1 From the Production Request Editor GUI, click on the **PR List** tab.
    - The PR List page will be displayed as shown in **Figure 26.14.4-1**.

- 2 View the listed PRs. Optionally, find a PR by entering a search string in the field next to the **Find** button and then clicking on the **Find** button.
- 3 To modify a PR listed, click on the PR in the list and from the **File** menu select **Save As...**
  - In the **File Selection** GUI, replace the current PR name shown in the **Selection** field with a new PR name. Then click on the **OK** button.
  - When modifying an existing PR, it must be saved under a new PR name.
  - Next, click on the **PR Edit** tab. The PR Edit page will be displayed with fields populated from the existing PR name, but having the new PR name chosen above.
  - See Section on using the PR Edit page and saving any changes made



**Figure 26.14.4-1. PR List GUI.**

#### **26.14.4.2 Viewing Data Processing Requests**

Clicking on the DPR View GUI tab displays a list of all DPRs for all PRs entered into the system.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

**1** From the PR Editor GUI, click on **DPR View** tab. The following information will be displayed:

- Data Processing Request Identification.
- PGE ID and its parameters.
- Request Data and Status.

#### **26.14.4.3 Listing Data Processing Requests**

Selection of one PR on the PR List by highlighting it and then clicking on the DPR List tab, brings up a detailed display of all DPRs associated with the selected PR. These may be examined in order to develop production plans and schedule jobs.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

**1** From the PR Editor GUI, click on **DPR List** tab. The following information is displayed:

- DPR Id.
- PGE Id.
- PR Name.
- Data Start Time.
- Data Stop Time.

#### **26.14.5 Using the Production Planning Workbench**

The Production Planner uses the Production Planning Workbench to create new production plans and display a planning timeline.

##### **26.14.5.1 Using the Planning Workbench to Run a PGE**

Once a PGE has been fully registered, its test data files have been inserted to the Science Data Server, and a single Data Processing Request (DPR) has been generated, the Planning Workbench can be used to plan for one execution run of a single PGE.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The required UNIX environment variables have been set properly.
2. The required servers of the ECS System are up and running.

3. A DPR has been generated successfully.
- 1 **Telnet to (PDPS) odyssey** or from the **SSIT Manager**, click on the **Tools** menu, then choose **xterm**. Then telnet to a PLN Host.
  - Alternatively, in any currently available xterm window, spawn a new session: type **xterm &**, press **Return**. Then telnet to the PLN Host.
  - It is recommended that this procedure begin within a new command shell on a PLN Host.
- 2 login: **ID**  
password:
- 3 *Login to DCE (dce\_login DCE\_user\_name DCE\_password and then press Enter Key.), setenv DISPLAY .....:0.0*
  6. Change the working directory to the location where the script for starting the Autosys is stored. (e.g. **cd /usr/ecs/<mode>/CUSTOM/utilities**).
  7. Type: **source EcCoEnvCsh**
- 4 At the UNIX prompt on an PLN Host, Type **EcPIAllStart <mode> <application\_id>**, press **Return**.
  - The *mode* is one of modes used in the ECS system. e.g. TS1.
  - The *application\_id* is a numerical number. e.g. 1.
  - For example: **EcPIAllStart TS1 1, Return**.
  - A Planning Workbench GUI will be appeared as shown in **Figure 26.14.6-1**.
- 5 In the Planning Workbench GUI, go to the subwindow labeled **Unscheduled** and click on a Production Request name.
  - The Production Request name is the name under which the PR was saved.
  - The PR name entry will be highlighted.
- 6 In the Planning Workbench GUI, click on the button next to the label **Schedule** (the button has an inverted triangle on it).
  - The PR highlighted in step 3 will appear in the subwindow labeled **Scheduled**.
- 7 In the Planning Workbench GUI, click on the **Activate** button
  - A small GUI labeled **Plan Activation** will be displayed.
- 8 In the Plan Activation GUI, set the time in the time field forward to allow ample time for the PGE to run. Then click on the **Ok** button.
  - All that is necessary is for there to be sufficient time for the PGE run. There is no penalty for allowing *too* much time.
  - The Production Request thus planned will be submitted to processing and its progress can be monitored with AutoSys.
- 10 When tasks are completed with the Planning Workbench GUI, click on the **File** menu, then choose **Exit**.
  - The Planning Workbench GUI will disappear.

***Important Note*** : The creation of Production Requests and Plans requires close coordination among all who are using the same mode in SSIT. Otherwise, the submittal of a Plan may prevent a waiting DPR from starting. In particular, when submitting a new Plan in a mode being shared with others, one should:

- Ask everyone else if they have a DPR awaiting data as part of a chain.
  - Check the PDPS database table PIDataProcessingRequest for any DPRs that are in state CQ\_HOLD and include these in the new Production Request and Plan.
  - Also, include any DPRs (except those marked SUCCESS) upon which the given DPR depends in the new Production Request and Plan.
- 

## 26.14.6 Creating and Activating of a Production Plan

The Production Planner creates a plan for production data processing at the DAAC by selecting specific PRs whose DPRs are to be run. The planning tool provides a forecast of the start and completion times of the jobs based upon historical experience in running these PGEs. Through the planning tool, when the generated plan is “activated,” the information included in the plan is transferred to the Data Processing subsystem and loaded into the Platinum AutoSys tool where production processing is managed.

The Production Planner creates the plan by selecting PRs from two lists of PRs, i.e., the list of available “Unscheduled” PRs and the list of “Scheduled” PRs. Using arrow buttons, the Production Planner moves the PRs between lists until the “Scheduled” list contains the desired set of PRs that define the new plan. Only one user can use the **Planning Work Bench** at a time. It is recommended for SSI&T that only one person do the planning for the group.

Before creating a new production plan the Production Planner must have available the following information:

- Name of the plan.
- Comments (if any).
- PRs to be included in the new production plan.

**1** Log into one of the pln sun workstations by typing: **username** then press the **Enter** key.

**2** Enter the **password** then press the **Enter** key.

Prior to the remote login, enter **setenv DISPLAY <local workstation IP address>:0.0** where the local workstation IP address represents the IP address you where you are located.

You may need to setup the terminal so that the remote host is displayed on your screen (Sun machine). This is done by clicking on the **Application Manager** icon (the file drawer located at the bottom of the screen), followed by the **Desktop Tools** icon, followed by the **Terminal Console** icon

**3** At a UNIX prompt type **cd** to the directory where the scripts are located. (e.g. **/usr/ecs/TS1/CUSTOM/utilities**).

**4** At a UNIX prompt type **setenv DISPLAY hostname:0.0**

- 5 At a UNIX prompt on the PLN host (e.g. p0pls01), type **EcPIPRE\_IFStart mode 3** a **Planning Workbench** GUI is displayed (Figure 26.14.6-1)



**Figure 26.14.6-1. Planning Workbench GUI**

Data concerning the currently active production plan are displayed.

If you want to “kill” (deactivate) the currently active production plan without activating a replacement, click on the **Kill** button.

Whenever you activate a plan (by clicking on the **Activate** button), you automatically “kill” the currently active plan.

- 6 Select **File** → **New** from the pull-down menu.  
The “New” window appears.
- 7 Type a name for the new plan, then press the **Tab** key on the keyboard.  
The **Planning Workbench** GUI is displayed.  
The **Plan Name** is displayed.  
The **Status** displayed is **Candidate**.
- 8 Type the desired date (in **MM/DD/YY** format), then press the **Tab** key on the keyboard to advance to the next field.
- 9 Type the desired time (in **hh:mm** format), then press the **Tab** key on the keyboard.  
The **Rollover Time** is displayed.
- 10 Type any relevant comments (up to 255 characters) in the **Comments** field.
- 11 Move PRs between the **Unscheduled** and **Scheduled** lists as necessary by selecting (highlighting) the PR to be moved by clicking on the PR in the list from which it is to be moved then clicking on the up or down arrow button (as applicable) to move the PR to the other list. Highlighted PR disappears from one list and appears on the other.  
The unscheduled and scheduled PR lists are scrollable.

- 12 When the **Scheduled** list accurately reflects the PRs to be scheduled in the production plan, select **File** → **Save** (or **File** → **Save As**) from the pull-down menu to save the new production plan.  
The new production plan is saved.
- 13 If the new plan is to be activated immediately, click on the **Activate** button to activate the new plan.  
The currently active plan is killed (deactivated) and the new plan is activated.
  - The **Production Planning Timeline** GUI is displayed.
- 14 If the new production plan is to be used as a baseline plan, click on the **Baseline** button.  
The “New” window appears.  
The plan is recorded as well as the time of baselining so that it can be used in comparing future processing results with planned objectives.
- 15 If the production plan being displayed is active and should be deactivated, click on the **Kill** button. The “New” window appears.  
The plan is deactivated without activating another plan.

The progress of one or more PGEs running within the PDPS may be monitored. The COTS tool used for this purpose is AutoSys® by Atria Software. Each Data Processing Request results in seven AutoSys jobs that are boxed together. An AutoSys job name follows the template:

*PGEname#Suffix*

where *PGEname* is replaced by the name of the PGE, and *Suffix* is a character indicating the job phase of the DPR

For example, for a scheduled PGE named MOPITT4, the AutoSys jobs making up that DPR would be:

MOPITT4#A  
 MOPITT4#S  
 MOPITT4#P  
 MOPITT4#E  
 MOPITT4#p  
 MOPITT4#I  
 MOPITT4#D

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The required servers of the ECS System are up and running.
2. A DPR has been scheduled successfully.

**To monitor production, execute the procedure steps that follow:**

---

- 1 In any currently available xterm window, spawn a new session: type **xterm &**, press **Return**. Then telnet to the DPS host.
  - It is recommended that this procedure begin within a new command shell on a DPS Host.

- Set the DISPLAY environment variable. At the UNIX prompt on the DPS host (e.g. p0pls01), type **setenv DISPLAY terminal\_id**, press **Return**.
- 2 Set the DCE environment variable, at the UNIX prompt on the DPS host (e.g. p0pls01), type **dce\_login DCE\_user\_name DCE\_password**, press **Return**.
- 3 Set the UNIX environment variable, at the UNIX prompt on the DPS host, change to the directory where the scripts are located (e.g. **cd /usr/ecs/TS1/CUSTOM/utilities**), then
- Type **setenv MODE mode** (e.g. TS1).
  - Type **source environment\_setup\_file** (e.g., **EcCoEnvCsh** for C shell users).
- 4 At the UNIX prompt on the DPS Host, under the directory where the scripts are located (e.g. **cd /usr/ecs/TS1/CUSTOM/utilities**), type **EcDpPrAutosysStart mode application\_id &**, then press **Return**.
- The **mode** is one of modes used in the ECS system (e.g., TS1).
  - The **application\_id** is a numerical number (e.g., 1).
  - For example: **EcDpPrAutosysStart TS1 1, Return**.
  - A GUI labeled **AutoSys** will be displayed.
  - This GUI will contain eight buttons for invoking various tools available under AutoSys.
- 5 In the AutoSys GUI, click on the **Ops Console** button.
- A GUI labeled **AutoSys Job Activity Console** GUI will be displayed.
  - The main subwindow of this GUI will contain a dynamically updated list of AutoSys jobs (seven jobs make up one DPR) currently scheduled.
  - To disable dynamic updating of the main subwindow (which may be distracting), click on the **View** menu, then choose **Select Jobs**. A GUI labeled **Job Selection** will be displayed. Under the label **Select by Name**, click on the square labeled **All jobs**, then click on the **OK** button.
  - DPRs will be listed in the column labeled **Job Name** and their statuses (e.g. SUCCESS) will be listed in the column labeled **Status**.
  - To view job status information for a particular DPR, click on a DPR. Below the main subwindow, available job status information will be displayed.
  - To view the existing event report, under the label **Reports**, click on the middle diamond labeled **Event**. The current event status for the selected DPR will be displayed in the subwindow labeled **Event Report**. Alternatively, the summary report for the selected DPR will be displayed by clicking on the middle diamond labeled **Summary**.
  - To view the job definition, under the label **Show**, click on the **Job Definition** tab. A GUI labeled **Job Definition** will be displayed. The selected DPR is shown in **Job Name**. To kill the DPR, click on the **Delete** tab. (**Warning: Be very careful to avoid deleting wrong DPR!**)
  - Exit the **AutoSys Job Activity Console** by clicking on the **Exit** button.
- 6 In the AutoSys GUI, click on the **JobScape** button.
- A GUI labeled **JobScape** will be displayed.
  - The main subwindow of this GUI will contain a dynamically updated list of AutoSys jobs (seven jobs make up one DPR) currently scheduled. The colors indicate the job statuses for DPRs and their jobs at present.

- There are eleven job statuses: **ACTIVATED, STARTING, RUNNING, SUCCESS, FAILURE, TERMINATED, RESTART, QUE\_WANT, ON\_ICE, OFF\_HOLD, and INACTIVE**. The color chart is on the left of GUI.
  - To view job status information for a particular DPR (or job) in detail, click on a DPR (or job), then click on the **Job Console** button. A GUI labeled **Job Console** will be displayed. The information shown here is similar to that shown in **Ops Console** as mentioned above.
  - To change the status of a job for a particular DPR, click on a job under that DPR, then press the right button of the mouse. Choose one of the functions in the lower part of the menu. For example, to hold a job, choose **On Hold**, then click the **Yes** button.
  - **Suggestion:** For a scheduled DPR, hold all jobs for that DPR except the first one (Allocation). After the first job runs successfully, release the next job (Staging) by choosing **Off Hold**. Repeat until all jobs are done. Therefore, if a job fails, it can be fixed and rerun without interfering with the others.
  - To exit the **JobScope**, click on the **File** menu, then choose **Exit**.
- 7 In the AutoSys GUI, click on the **TimeScape** button.
- A GUI labeled **TimeScape** GUI will be displayed.
  - The main subwindow labeled **Job Name** of this GUI will contain a dynamically updated list of AutoSys jobs (seven per DPR) currently scheduled.
  - To disable dynamic updating of AutoSys jobs (which may be distracting), click on the **Freeze Frame** button.
  - The color of each job indicates its status according to the legend on the left side of the GUI.
  - The time line is shown on the right side of the GUI with time marked at the top. A red vertical line (dashed) indicates the current time.
  - Exit the **TimeScape** GUI by clicking on the **File** menu and selecting **Exit**.
- 8 To quit AutoSys, in the AutoSys GUI, click on the **Exit** button.
- The AutoSys GUI will disappear.
  - Refer to Section (Troubleshooting and General Investigation) if any job fails on AutoSys.

On workstation **x0pls##**, at the UNIX prompt in a terminal window, enter steps as in step 1 below.

NOTE: The **x** in the workstation name will be a letter designating your site:  
**g** = GSFC, **m** = SMC, **l** = LaRC, **e** = EDC, **n** = NSIDC, **o** = ORNL, **a** = ASF, **j** = JPL; the **##** will be an identifying two-digit number (e.g., **g0pls01** indicates a Planning and Data Processing subsystem(PLS) workstation at GSFC).

Prior to the rlogin, enter **setenv DISPLAY <local\_workstation IP address>:0.0**. The **<ipaddress>** is the ip address of **x0pls##**, and **xterm** is required when entering this command on a Sun terminal.

## 26.14.7 Monitoring Production in PDPS Subsystem

### Example of monitoring production using above procedures:

---

- 1 **telnet to (PDPS) p0sps06** or from the SSIT Manager, click on the **T**ools menu, then choose **X**term. Then telnet to a PLN Host.
  - 11 login: **ID**, password:
  - 3 *Login to DCE (dce\_login DCE\_user\_name DCE\_password and then press Enter Key.), setenv DISPLAY .....:0.0*
  - 4 Change the working directory to the location where the script for starting the Autosys is stored. (e.g. **cd /usr/ecs/<mode>/CUSTOM/utilities**).
  - 5 **setenv MODE <MODE>**
  - 6 **source EcCoEnvCsh**
  - 4 At the UNIX prompt on the PLN Host, type: **EcDpPrAutosysStart <MODE> <Autosys Instance>**, example: **TS1 1, &**, press **Return**.
    - A GUI labeled **AutoSys** will be displayed.
    - This GUI will contain eight buttons for invoking various tools available under AutoSys.
  - 5 In the AutoSys GUI, click on the **Ops Console** button.
    - The AutoSys GUI will be displayed.
  - 6 Select the desired display and view the contents.
    - Selections include:
      1. Autosys Job Activity Ops Console
      2. HostScape
      3. TimeScape
      4. JobScape
      - The main subwindow of this GUI will contain a dynamically updated list of AutoSys jobs (seven jobs make up one DPR) currently scheduled.
      - To disable dynamic updating of the main subwindow (which may be distracting), click on **Freeze Frame** in the small subwindow labeled **Show**.
      - DPRs will be listed in the column labeled **Job Name** and their statuses (SUCCESS, FAILURE, TERMINATED) will be listed in the column labeled **Status**.
      - To view job status information for a particular DPR, click on a DPR. Below the main subwindow, available job status information will be displayed.
      - To view the existing event report, under the label **Reports**, click on the middle diamond labeled **Event**. The current event status for the selected DPR will be displayed in the subwindow labeled **Event Report**.
      - Exit the **AutoSys Job Activity Console** by clicking on the **Exit** button.
- Suggestion:* For a scheduled DPR, hold all jobs for that DPR except the first one (Allocation). After the first job runs successfully, release the next job (Staging) by choosing Off Hold. Repeat until all jobs are done. Therefore, if a job fails, it can be fixed and rerun without interfering with the others.

This is especially important for the Postprocessing job. If the PGE fails and the Postprocessing job is not **On Hold**, the DPR will have to be deleted and a new one created. This happens because PDPS will have deleted all references to the output granules in the PDPS database

- 7 In the AutoSys GUI, click on the **TimeScope** button.
    - A GUI labeled **TimeScope** GUI will be displayed.
    - The main subwindow labeled **Job Name** of this GUI will contain a dynamically updated list of AutoSys jobs (seven per DPR) currently scheduled.
    - To disable dynamic updating of AutoSys jobs (which may be distracting), click on the **Freeze Frame** button.
    - The color of each job indicates its status according to the legend on the left side of the GUI.
    - The time line is shown on the right side of the GUI with time marked at the top. A red vertical line (dashed) indicates the current time.
    - Exit the **TimeScope** GUI by clicking on the **File** menu and selecting **Exit**.
  - 8 To quit AutoSys, in the AutoSys GUI, click on the **Exit** button.
    - 7 The AutoSys GUI will disappear.
  - 9 Use the “**tail -f em.log**” to create a permanent record of a log file if debugging is necessary. Note: the xx.log file has to be created first: “**vi em.log**”
  - 10 To look at the Data Base type: **setenv MODE <MODE>, cd utilities source EcCoEnvCsh, cd dbr, dbrowser-syb <MODE> 2 &**
  - 11 **Scripts to restart the servers and subsystems are located in: /home/cmts1/restart/drop4/**
- 

## 26.14.8 Using the Q/A Monitor

The Q/A Monitor allows the output products produced during a PGE run to be accessed and examined. Input test data granules and Production History files can be retrieved in the same manner. The Q/A Monitor retrieves output products based on the collection name (*i.e.* the ESĐT) and time of Insertion to the Science Data Server.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow. The Q/A Monitor is discussed in more detail in Section 15.

Assumptions:

1. The required UNIX environment variables have been set properly.
2. The desired output products have been successfully Inserted to the Science Data Server.

**To use the Q/A Monitor, execute the procedure steps that follow:**

---

- 1 **telnet to (PDPS) p0sps06** or from the SSIT Manager, click on the **Tools** menu, then choose **Xterm**. Then telnet to a PLN Host.

8. Alternatively, in any currently available xterm window, spawn a new session: type **xterm &**, press **Return**. Then telnet to the PLN Host.
9. Set the DISPLAY environment variable: **setenv DISPLAY terminal\_id**, press **Return**.
10. Type **setenv <mode>** (e.g., **TS1**).
11. Type **source environment\_setup\_file** (e.g., **EcCoEnvCsh** for C shell users).
- 2 login: **ID**, password:
- 3 *Login to DCE (dce\_login DCE\_user\_name DCE\_password and then press Enter Key.), setenv DISPLAY ....:0.0*
  - Change the working directory to the location where the script for starting the Autosys is stored. (e.g. **cd /usr/ecs/<mode>/CUSTOM/utilities**).
- 4 At the UNIX prompt on the PLN Host, type: **EcDpPrQaMonitorGUIStart <MODE> <Q/A Monitor Instance>**, example: **TS1 1, &**, press **Return**.
  - The *mode* is the operations mode.
  - The Q/A Monitor GUI will be displayed.
  - Various messages from the Q/A Monitor will appear in this window as it is running.
- 5 In the Q/A Monitor subwindow labeled **Data Types**, select an ESDT from the list presented and click on it.
  - Use the scroll bars if necessary to locate desired ESDT.
  - Optionally, use the **Find** field and button to locate an ESDT.
- 6 In the Q/A Monitor, under the label **Data Granule Insert Date (mm/dd/yy)**, set the date range within which the search for granules of the ESDT selected will be conducted.
  - The date range can be made arbitrarily large to select all granules of a particular collection (ESDT).
  - The dates refer to date of granule Insert to the Science Data Server.
- 7 In the Q/A Monitor, click on the **Query** button.
  - The results of the query will be displayed in the bottom window, labeled **Data Granules**.
  - All granules having the ESDT selected in step 3 and having Insert times within the date range specified in step 4 will be listed in this window.
- 8 In the Q/A Monitor subwindow labeled **Data Granules**, click on one of the data granules listed to be examined.
  - The data granule selected will be highlighted.
- 9 To retrieve the data granule's Production History file, click on the **Retrieve Prod History** button.
  - The Production History (PH) tar file corresponding to the selected data granule will be retrieved from the Science Data Server and placed on the local machine (a PLN Host) in the directory **/var/tmp**.
  - The PH can then be moved or copied manually from the **/var/tmp** directory to a user working directory for examination.
  - Only the PH file is retrieved with the **Retrieve Prod History** button.
  - If only the PH is desired, exit this procedure. To retrieve the data granule itself, continue on to step 8.

- 10 To retrieve the data granule, click on the **Retrieve Data Granule** button and note its file name (listed in the entry for the granule; you may have to scroll over to the right to see it).
    - The data granule selected will be retrieved from the Science Data Server and placed on the local machine (a PLS Host) in the directory /var/tmp.
    - A granule of any format (binary, ASCII, HDF, HDF-EOS) may be retrieved in this manner. Only HDF and HDF-EOS granules, however, may be further visualized using EOSView as described in the next steps.
  - 11 To examine the data granule, click on the **Visualize data** tab.
    - The **Visualize data** page will be displayed.
  - 12 In the main subwindow on the **Visualize data** page, locate the file name of the granule retrieved in step 8 and click on it.
    - The item selected will be highlighted and will appear in the **Selection** subwindow below.
  - 13 Click on the **Visualize** button.
    - This action will invoke **EOSView** with the granule selected.
    - The granule must be HDF or HDF-EOS format.
  - 14 When tasks are completed with the Q/A Monitor GUI, click on the **File** menu, then choose **Exit**.
- 

## 26.15 Postprocessing and General Investigation

An important part of SSI&T is verifying that the output files produced at the DAAC are identical (within particular tolerances) to the test output files delivered with the DAPs. A successful comparison is a strong indication that the porting of the science software from the development facility at the SCF to the operational facility at the DAAC has not introduced any errors.

A number of file comparison tools are available during SSI&T via the SSIT Manager GUI or they can be invoked from the UNIX command line. Two tools are available for comparing HDF or HDF-EOS files, one tool for comparing ASCII files, and another tool for assisting in comparing binary files.

It is assumed that the Instrument Team has delivered test output files (produced at their SCF) with which to perform the comparison.

### 26.15.1 Examining PGE Log Files

Three log files are produced by PGEs during runtime: the Status log, User Log, and the Report log. These log files are written by the SDP Toolkit and by the science software using the Toolkit's Status Message Facility (SMF). The location of these log files is specified in the Process Control File (PCF). When the PGE is built and run with the SCF version of the SDP Toolkit, the location and file names of the log files can be set as desired. When the PGE is built with the DAAC version of the SDP Toolkit and run within the PDPS, the location and file names of the log files is set by the system in the instantiated PCF.

The Status log file captures all error and status information. The User log file captures a subset of messages which are more informational. The Report log file captures arbitrary message strings sent by the PGE.

The section aforementioned describes how to examine log files produced by PGEs that have been built with the SCF version of the SDP Toolkit and run from the command line.

The section aforementioned describes how to examine log files (within the Production History) produced by PGEs that have been built with the DAAC version of the SDP Toolkit and run within the PDPS.

### 26.15.1.1 Log Files From PGEs Run Outside of the PDPS

When the PGE is run outside of the PDPS, the PCF specifies the location and file names of the log files produced. This procedure describes how to locate that information from the PCF and use it to examine the log files.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The PGE has been successfully built with the SCF version of the SDP Toolkit.
  2. The PGE's PCF has been updated properly for the DAAC environment .
- 1 At the UNIX prompt on an AIT Sun or on the SPR SGI, type **cd *PCFpathname***, press **Return**.
    - The *PCFpathname* is the full path name to the location of the PCF used by the PGE for which log files are to be examined.
  - 2 At the UNIX prompt on the AIT Sun or on the SPR SGI, type **vi *PCFfilename***, press **Return**.
    - The *PCFfilename* is the file name of the PCF used by the PGE for which log files are to be examined.
    - This brings up the file named *PCFfilename* in the *vi* editor.
    - Any text editor may be used such as *emacs*. For example, **emacs MOD35.pcf**, press **Return**.
  - 3 In the editor, search for logical IDs (beginning in the first column) **10100**, **10101**, and **10102**. These are the PCF entries for the LogStatus, LogReport, and LogUser respectively. For each, note the file names in field 2 and the path names in field 3. Then quit the editor.
    - If field 3 is blank, then the location is given by the default location specified in a line above the entries beginning with the “!” character.
  - 4 At the UNIX prompt on the SPR SGI, type **vi *StatusLogPathname/filename***, press **Return**.
    - The *StatusLogPathname/filename* is the full path name and file name of the Status log file noted in step 3 associated with PCF logical ID 10100. When finished, quit the editor.

- Note any error or warning messages in file.
  - Any text editor may be used such as *emacs*. For example, **emacs /PGE/MOD35/LogStatus**, press **Return**.
- 5 At the UNIX prompt on the SPR SGI, type **vi *UserLogPathname/filename***, press **Return**.
- The *UserLogPathname/filename* is the full path name and file name of the Status log file noted in step 3 associated with PCF logical ID 10101. When finished, quit the editor.
  - Note any error or warning messages in file.
  - Any text editor may be used such as *emacs*. For example, **emacs /PGE/MOD35/LogUser**, press **Return**.
- 6 At the UNIX prompt on the SPR SGI, type **vi *ReportLogPathname/filename***, press **Return**.
- The *ReportLogPathname/filename* is the full path name and file name of the Status log file noted in step 3 associated with PCF logical ID 10102. When finished, quit the editor.
  - Note any anomalous messages in file.
  - Any text editor may be used such as *emacs*. For example, **emacs /PGE/MOD35/LogReport**, press **Return**.

### 26.15.1.2 Production History Log Files From PGEs Run Within the PDPS

The Production History (PH) is created during PGE execution within the PDPS and then Inserted into the Data Server upon PGE completion. The PH is a UNIX tar file that includes the PGE log files.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The PDPS archive configuration area is properly set up.
  2. The environment variable **DataServer** contains the full path name to the archive. This is typically **/imf/archive/** or **/imf\_data/archive/** and varies at each DAAC.
- 1 At the UNIX prompt on the SPR SGI, type **cd \$DataServer/PH**, press **Return**.
  - The **\$DataServer** is an environment variable containing the full path name of the Data Server archive and **PH** is a subdirectory under **\$DataServer** containing the Production History tar files.
    - For example, type **cd \$DataServer/PH**, press **Return**.
  - 2 At the UNIX prompt on the AIT Sun or on the SPR SGI, type **ls -al**, press **Return**.
  - A list of the current contents will be displayed. These will be Production History tar files.
    - The file names of PH files are named *PGEname#versionMMDDYYhhmm\_runtime.tar\_UR* where *PGEname* is replaced by the PGE name, *version* is replaced by the PGE version, *MMDDYY* is replaced by the Insert date in the month-day-year format, *hhmm* is replaced by the Insert time in the hours-minutes format, and *UR* is replaced by the Universal Reference. For example, the PH file

name for Release 4.1 of a SAGE III PGE named sage\_1t Inserted on December 14, 1999 at 2:00pm could be:

sage\_1t#2.11214991400\_runtime.tar\_YAAa005Li\_19991214135815.

- Look for the PH of interest.
- 3** At a UNIX prompt on the AIT Sun or on the SPR SGI, type **cp *PHtarFilename WorkingPathname***, press **Return**.
- The *PHtarFilename* is the file name of the Production History tar file.
  - The *WorkingPathname* is the full path name to some working directory in which the Production History tar file is to be placed and examined.
- 4** At the UNIX prompt on the AIT Sun or on the SPR SGI, type **cd *WorkingPathname***, press **Return**.
- The *WorkingPathname* is the full path name to the working directory specified in step 3.
- 5** At the UNIX prompt on the AIT Sun or on the SPR SGI, type **tar xvf *PHtarFilename***, press **Return**.
- The *PHtarFilename* is the file name of the Production History tar file in the working directory.
- This command will untar the Production History tar file, extracting its component files into the current directory.
- 6** At the UNIX prompt on the AIT Sun or on the SPR SGI, type vi *StatusLogFilename*, press Return.
- The *StatusLogFilename* is the file name of the Status log file within the PH. When finished, quit the editor.
- Note any error or warning messages in file.
- Any text editor may be used such as emacs. For example, emacs *LogStatus*, press Return.
- 7** At the UNIX prompt on the AIT Sun or on the SPR SGI, type vi *UserLogFilename*, press Return.
- The *UserLogFilename* is the file name of the User log file within the PH. When finished, quit the editor.
- Note any error or warning messages in file.
- Any text editor may be used such as emacs. For example, emacs *LogUser*, press Return.
- 8** At the UNIX prompt on the AIT Sun or on the SPR SGI, type vi *ReportLogFilename*, press Return.
- The *ReportLogFilename* is the file name of the Report log file within the PH. When finished, quit the editor.
- Note any error or warning messages in file.
- Any text editor may be used such as emacs. For example, emacs *LogReport*, press Return.

### **26.15.1.3 History Log Files From Failed PGEs Run Within the PDPS**

The History Log(HL) is created during PGE execution within the PDPS and then Inserted into the Data Server upon failure of the PGE. The HL is a UNIX file that includes the PGE log files, the PCF and PH.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The PDPS archive configuration area is properly set up.
2. The environment variable `DataServer` contains the full path name to the archive.
- 1 At the UNIX prompt on the SPR SGI, type `cd $DataServer/FAILPGE`, press **Return**.
  - The `$DataServer` is an environment variable containing the full path name of the IMF Data Server archive and `FAILPGE` is a subdirectory under `$DataServer` containing the History Log files.
  - For example, type `cd $DataServer/FAILPGE`, press **Return**.
- 2 At the UNIX prompt on the SPR SGI, type **ls -al**, press **Return**.
  - A list of the current contents will be displayed. These will be History Log files.
  - The file names of HL files are named `PGName#versionMMDDYYhhmm_runtime.tar_UR` where `PGName` is replaced by the PGE name, `version` is replaced by the PGE version, `MMDDYY` is replaced by the Insert date in the month-day-year format, `hhmm` is replaced by the Insert time in the hours-minutes format, and `UR` is replaced by the Universal Reference. For example, the HL file name for Release 4.1 of a SAGE III PGE named `sage_1t` Inserted on December 14, 1999 at 2:00pm could be:  
`sage_1t#2.11214991400_runtime.tar_YAAa005Li_19991214135815`.
  - Look for the HL of interest.
- 3 At a UNIX prompt on the SPR SGI, type **cp *HLFilename WorkingPathname***, press **Return**.
  - The ***HLFilename*** is the file name of the History Log file.
  - The ***WorkingPathname*** is the full path name to some working directory in which the History Log file is to be placed and examined.
- 4 At the UNIX prompt on the SPR SGI, type **cd *WorkingPathname***, press **Return**.
  - The ***WorkingPathname*** is the full path name to the working directory specified in step 3.
- 5 At the UNIX prompt on the SPR SGI, type **vi *HLFilename***, press **Return**.
  - The ***HLFilename*** is the file name of the History Log. When finished, quit the editor.
  - Note any error or warning messages in file.
  - Any text editor may be used such as *emacs*. For example, **emacs *HLFilename***, press **Return**.

### 26.15.2 The Production History

The Production History (PH) is a UNIX tar file that is produced and archived for every run of a PGE in the PDPS. Each PH can be uniquely retrieved from the Data Server.

PH files are located in the `$DataServer/PH` directory and have the following naming convention:

`PGName#versionMMDDYYhhmm_runtime.tar_UR`

where *PGEname* is replaced by the PGE name, *version* is replaced by the PGE version, *MMDDYY* is replaced by the Insert date in the month-day-year format, *hhmm* is replaced by the Insert time in the hours-minutes format, and *UR* is replaced by the Universal Reference.

For example, a PH file name for Release 4.1 of a SAGE III PGE named sage\_1t Inserted on December 14, 1999 at 2:00pm would be:

sage\_1t#2.11214991400\_runtime.tar\_YAAa005Li\_19991214135815.

Detailed procedures for tasks performed by the SSI&T operator are provided in the sections that follow.

Assumptions:

1. The PDPS archive configuration area is properly set up.
2. The environment variable *DataServer* contains the full path name to the archive.

**1** At the UNIX prompt on an AIT Sun or on the SPR SGI, type **cd \$DataServer/PH**, press **Return**.

- The **\$DataServer** is an environment variable containing the full path name of the IMF Data Server archive and **PH** is a subdirectory under **\$DataServer** containing the Production History tar files.

- For example, type **cd \$DataServer/PH**, press **Return**.

**2** At the UNIX prompt on the AIT Sun or on the SPR SGI, type **ls -al**, press **Return**.

- A list of the current contents will be displayed. These will be Production History tar files.

- The file names of PH files are named

*PGEname#versionMMDDYYhhmm\_runtime.tar\_UR* where *PGEname* is replaced by the PGE name, *version* is replaced by the PGE version, *MMDDYY* is replaced by the Insert date in the month-day-year format, *hhmm* is replaced by the Insert time in the hours-minutes format, and *UR* is replaced by the Universal Reference. For example, the PH file name for Release 4.1 of a SAGE III PGE named sage\_1t Inserted on December 14, 1999 at 2:00pm could

be:sage\_1t#2.11214991400\_runtime.tar\_YAAa005Li\_19991214135815.

- Look for the PH of interest.

**3** At a UNIX prompt on the AIT Sun or on the SPR SGI, type **cp PHtarFilename WorkingPathname**, press **Return**.

- The **PHtarFilename** is the file name of the Production History tar file.

- The **WorkingPathname** is the full path name to some working directory in which the Production History tar file is to be placed and examined.

**4** At the UNIX prompt on the AIT Sun or on the SPR SGI, type **cd WorkingPathname**, press **Return**.

- The **WorkingPathname** is the full path name to the working directory specified in step 3.

**5** At the UNIX prompt on the AIT Sun or on the SPR SGI, type **tar**

**xvf *PHtarFilename***, press **Return**.

- The *PHtarFilename* is the file name of the Production History tar file in the working directory.
- This command will untar the Production History tar file, extracting its component files into the current directory.

**6** At the UNIX

mpt on the AIT Sun or on the SPR SGI, type **vi *PHcomponentFile***, press **Return**.

- The *PHcomponentFile* is the file name of one of the PH component files. The component files are:
  - *PGename#versionMMDDYYhhmm.Log* - Contains the DPR ID, the actual command used to run the PGE, resource usage information, the PGE exit status, and files used by the PGE.
  - *PGename#versionMMDDYYhhmm.Pcf* - The actual instantiated PCF used when running the PGE.
  - *PGename#versionMMDDYYhhmm.ProdLog* - Contains the DPR ID, the PGE ID, and resource usage information (same as

in the *.Log* file).

- *PGename#versionMMDDYYhhmm.Profile* - Contains the environment variables defined during the execution of the PGE including the contents of the PATH environment variable.
- *PGename#versionMMDDYYhhmm.TkR*

eport - The Report log file, same as is produced when run outside of the PDPS.

- *PGename#versionMMDDYYhhmm.TkStatus* - The Status log file, same as is produced when run outside of the PDPS.
- *PGename#versionMMDDYYhhmm.TkUser* - The User log file, same as is produced when run outside of the PDPS.
- *ESDTmmddyHHMM.met* - All target MCFs for all Inserts on behalf of the PGE. The *ESDT* is the *ESDT ShortName* into which the file was Inserted, *mmddy* is the month, day, and year of the Insert and *HHMM* is the time of the Insert.

## 26.16 Examining PDPS-Related Scripts and Message Files

This section describes how users may access files, in addition to the PGE-produced log files, which are created during the execution of a DPR job and which may hold information useful in tracing processing problems.

Some of these files are written by default to directory paths that can only be accessed on either the SGI processor machine or one of the Sun workstations. More detailed descriptions of these files and the conditions under which they are generated will be supplied in future Green Book versions.

### 26.16.1 Examining AutoSys JIL Scripts

**JILxxxxxxxx** is the Job Information Language (JIL) script that defines the DPR job to **AutoSys** and which must be submitted to the **AutoSys** Database before a DPR job can be run. The name of the file created is system-generated and begins with the characters 'JIL' followed by nine characters (e.g. JILAAa0066c).

#### Sample file content:

```
insert_job: 5251_823122483_1
job_type: command
command: /usr/ecs/{mode}/CUSTOM/data/bin/sgi/EcDpAtExecutionMain
5251_823122483_1
machine: sprlsgigsfc
std_out_file: /home/cboettch/mockpge_msfc/out/dpat_std.out
std_err_file: /home/cboettch/mockpge_msfc/out/dpat_std.err
profile: /usr/ecs/<MODE>/CUSTOM/data/bin/sgi/EcDpAtRunProfile.sh
```

**To examine JILxxxxxxxx scripts on the AIT Sun, execute the procedure steps that follow:**

---

- 1 At the UNIX prompt on an AIT Sun, type **cd *JILscriptPathname***, press **Return**.
  - The ***JILscriptPathname*** is the full path name to the location of the JILxxxxxxxx scripts to be examined.
- 2 At the UNIX prompt on the AIT Sun, type **vi *JILscriptFilename***, press **Return**.
  - The ***JILscriptFilename*** is the file name of the JILxxxxxxxx script to be examined.
  - This brings up the file named ***JILscriptFilename*** in the *vi* editor.
  - Any text editor may be used such as *emacs*. For example, **emacs *JILscriptFilename***, press **Return**.

### 26.16.2 Examining Application Log Files (ALOG)

Most of the custom code used during SSI&T routinely produce log files. For example, the SSIT Manager produces a log file named **EcDpAtMgr.log** and the tool used to Insert SSEPs to the Data Server (**EcDpAtInsertExeTarFile.sh**) produces a log file named **EcDpAtInsertExeTarFile.log**. These files are placed in the directory in which the tool was executed. If the **SSIT Manager** is run from the user's home directory, then the log files for each of the associated tools will be found in the user's home directory. Log files are produced at the first invocation of the tools, even if no messages are written to them. During subsequent use of the tools, the associated log files will be appended.

Log files are generally named according to the convention:

*ApplicationName.log*

where *ApplicationName* is replaced with the name of the tool's executable binary. For tools that are shell scripts (e.g. .sh files), the shell name is left out of the log file name. For example, the tool **EcDpAtInsertStaticFile.sh** produces a log file named **EcDpAtInsertStaticFile.log** and not **EcDpAtInsertStaticFile.sh.log**.

Where an **SSIT Manager** application has been run using login **cmsts1**, pw: **ecsuser** with **dce\_login**, the log files will be found using path: **/usr/ecs/{MODE}/CUSTOM/logs/**.

**DCE failures** have been encountered when installing **ESDT's**, **MCF's** and **.met files**. The term bounce the servers has been widely used in conjunction with the effort to re-install or delete files. **Bounce** means to **shut down a server** and then **bring them back up** to rid the servers of unwanted or old bindings. The nature of what needs to be done is outlined as follows:

- 1 Install or Delete **ESDT's** - the **SDSRV** and **ADSRV** need to be bounced after installation or removal of **ESDT's** to allow for a refresh of the **DCE** cell management.
- 2 For **PGE.....odl**, **MCF's** and **.met files**, bouncing the servers **SDSRV** and **ADSRV** need to be done after installation and reinstallation.
- 3 This can be done by logging into **ECS Assistant** for each server. The login should be with generic **ID:** and **PW:**, and **dce\_login DCE\_user\_name DCE\_password** and then press **Enter Key**.

## 26.17 PDPS Troubleshooting - The PGE Job has Failed

- The PGE Job has failed, but the DPR has not gone into "Failed-PGE" processing
- The Post-Execute Job has failed
- The PGE Job and Post-Execute Job have both failed, but the DPR has not gone into "Failed-PGE" processing
- The PGE Job has failed and the DPR has gone into "Failed-PGE" processing

### 26.17.1 The PGE Job has failed

This condition is indicated when the PGE job only is red in **AutoSys**. This is hard to do, because the **AutoSys** job definition for this job says to allow any exit code to indicate success. This is because we want the next job, the post-execute job, to continue even if this job fails. This job will "succeed" even if the PGE Wrapper job, **EcDpPrRunPGE**, doesn't exist. This job can fail if **AutoSys** cannot see the machine machine.

### 26.17.2 The Post-Execute Job has failed

This condition is indicated when the Post-Execute Job only is red in **AutoSys**. This happens when the PGE job never ran or if for some other reason (such as a mount point problem) the Execution Manager job cannot read the log file created by **EcDpPrRunPGE**.

Check that **/usr/ecs/B302TS1/CUSTOM/bin/DPS/EcDpPrRunPGE** and **EcDpPrRusage** exist on the science processor and that they are not links.

Check that **/usr/ecs/DEV04/CUSTOM/data/DPS** on the science processor is mounted or linked to **/usr/ecs/DEV04/CUSTOM/data/DPS** on the queuing server machine.

### 26.17.3 The PGE Job and Post-Execute Job have both failed

This condition is indicated when both the PGE and Post-Execute Jobs are red in **AutoSys**, but no other jobs are red. This indicates that the Post-Execute job has read the log file created by **EcDpPrRunPGE** in the runtime directory and has found an exit status not equal to 0. However, it failed to de-stage the failed **pge tar file**.

---

### 26.17.4 The PGE Job has failed and the DPR has gone into "Failed-PGE" processing

This condition is indicated when the entire job box has turned red along with post-execute, de-staging and de-allocation jobs. A Failed PGE Tar File has been created and archived.

A PGE may fail for many reasons. Some of the possible causes are documented here:

11            The PGE is the wrong architecture.

This happens when the PGE was miss-defined as **New32**, **Old32** or **64** from the SSIT Operational Metadata GUI. The PGE will core dump because of this problem. To fix this you need to go back to **the SSIT Operational Metadata GUI** and enter the correct architecture, then delete any **DPRs** created for that **PGE** and recreate them.

- One of the expected inputs for the PGE is missing

The first reason for this is that an expected input of the PGE is NOT defined in the **PGE ODL**. Check the error messages for something about a missing Logical Id and then check the **PGE ODL** for the expected **Logical Id**.

This can also happen when a miscommunication causes Subscription Manager to release a PGE despite it missing one (or more inputs). To find out if this is the case, verify that all inputs to the DPR have their availability flag set to 1 in **PIDataGranuleShort** and the corresponding entries in **PIDprData** have the accepted field set to 1.

- The leapseconds file is incorrect.

### 26.17.5 PDPS Troubleshooting - A single DPS job has failed or is hanging

**The entire Job Box is hung**

**A DPS Allocation job is hanging**

**A DPS Allocation job has failed**

**A DPS Staging job is hanging**

**A DPS Staging job has failed**

**A DPS Preprocessing job is hanging**

**A DPS Preprocessing job has failed**

**A DPS PGE job is hanging**

**A DPS PGE job has failed**

**A DPS Post-processing job has failed**

**A DPS De-staging job is hanging**

**A DPS De-staging job has failed**

**A DPS De-allocation job has failed**

**All known problems are corrected and the re-start of the job fails again**

**Non-PDPS servers are down**

**Back to the PDPS Troubleshooting home page**

### **26.17.5.1 The entire Job Box is Hung**

This condition is determined by noting that the entire Job Box (all 8 job steps) are the same color, and it is either the one indicated for "Inactive" jobs or the one for "On Hold" jobs. Check the legend to the left on the Jobscape display for the job box color meanings.

- The AutoSys Event server or one of the AutoSys clients could be down. See
- Attempt to re-start the Job Box by selecting the top of the Job Box.

### **26.17.5.2 A DPS Allocation job is hanging**

This condition is determined by noting that the Allocation job has turned green to indicate that it is running, but that it never turns red (failed) or blue (success). If you "tail" the DPR .err file (eg: "tail -f /usr/ecs/OPS/CUSTOM/logs/MODPGE08#s28035000OPS.err") you see that nothing is happening, or that the job is in a retry loop.

- The Science Data Server (SDSRV) may be waiting for a request to Data Distribution (DDIST) to distribute the PGE tar file, but it can't because Storage Management (STMGT) is down. Go to where the DDIST GUI is running. Refresh the GUI. Check to see if the requestor source is EcDpPrEM and that the state is "Suspended with Errors". If this is the case, then you will have to bounce STMGT. After this is done, select the request on the DDIST GUI and click on "resume".
- The Science Data Server (SDSRV) may be waiting for a request to Data Distribution (DDIST) to distribute the PGE tar file, but it can't because Storage Management can't FTP the file to the data directory on the science processor disk. Go to where the DDIST GUI is running. Refresh the GUI. Check to see if the requestor source is EcDpPrEM and that the state is "Suspended with Errors". Does the target directory exist? Can you FTP a file to the directory on the science processor? If the answer to these questions is no, then fix the problem, and resume the request.
- If you observe that the Allocation Job is in a retry loop, then the SDSRV may be down. See Non-PDPS servers are down. Note that the first retry is designed to fail, because the software is retrieving server-side information to refresh the client-side at this point.
- The request may be waiting on the archive to stage the file. If there are several other requests in progress, the PGE acquire may have to wait until one or more of them completes. Check the state in the DDIST GUI - if it is in "staging" state, then the request should eventually complete.

### 26.17.5.3 A DPS Allocation job has failed

This condition is determined by noting that the Allocation job has turned red.

- Look at the .ALOG file (in `/usr/ecs/{MODE}/CUSTOM/logs`). If it is there, then look for the following:
  - A message of "Error: unable to update Machine in Autosys" means that DPS is unable to access the AutoSys database. The auto.profile in `/usr/ecs/MODE/CUSTOM/bin/DPS` has the wrong settings for AUTOSYS and AUTOUSER parameters. Although they may differ from DAAC to DAAC, the expected values are:
    - AUTOSYS = /usr/ecs/MODE/COTS/autotreeb/autosys**
    - AUTOUSER = /usr/ecs/MODE/COTS/autotreeb/autouser**
- To fix the problem, you either need to run the AutoSys Mkcfig again or go into the auto.profile file and change the values by hand.
- A message of "Unable to determine type of UR" means that the PGE tar file has not been inserted. To verify this is the problem check the PIResourceRequirement table in the PDPS database. There should be a non-null entry for the field exeTarUR. If that field is null, you need to go back to the SSIT procedure and insert the EXE Tar File. Then you should be able to re-start the job and watch it complete successfully.

If the .ALOG file is NOT present. Then do the following:

- Bring up the Autosys Ops Console and select the Allocation Job that has failed.
- Check the return code. A value of 122 means that owner of the job DOES NOT HAVE WRITE PERMISSION to the log files directory. You need to find out the user account that was used to bring up Autosys and verify that it is correct and should have write permission to the logs directory.

### 26.17.5.4 A DPS Staging job is hanging

**See A DPS Allocation job is hanging**

### 26.17.5.5 A DPS Staging job has failed

This condition is determined by noting that the Staging job has turned red. Look at the .ALOG file (in `/usr/ecs/{MODE}/CUSTOM/logs`) for the DPRID of the job that has failed.

- A message of "ESDT Acquire Failed for UR...." means that SDSRV had trouble processing one of the acquire requests. In this case re-starting the job should allow the acquire to succeed.

### 26.17.5.6 A DPS PreProcess job has failed

This condition is determined by noting that the Pre-Process job has turned red.

Look at the .ALOG file (in `/usr/ecs/{MODE}/CUSTOM/logs`) for the DPRID of the job that has failed. If it is there, then look for the following:

- A message of "NOFREECPUS" means that all of the Science Processor CPUs are busy and the PreProcess job went through its maximum number of retries to find an available CPU. You can just start the job again and it will work its way through its retries until a CPU is available.

Possible reasons for a job to run out of CPU resources:

- PGEs are taking longer to run than expected. DPS plans for execution times specified during SSIT, and if those times are exceeded by a large margin (by an executing PGE) it is possible that a PGE that is "ready to run" will be CPU starved.

### **26.17.5.7 A DPS PGE job is hung**

This condition is determined by noting that the Execution job has turned orange or oscillates between orange and green.

- The AutoSys client is most likely down. See Checking the Status of AutoSys for how to verify AutoSys is up and happy.

### **26.17.5.8 A DPS PGE job has failed**

This condition is determined by noting that the Execution job has turned red or the entire job box has turned red (failedPGE scenario).

See Troubleshooting - The PGE Job has Failed.

### **26.17.5.8 A DPS De-staging job has failed**

The destaging job icon on the JobScape GUI will have turned red. Look at the .err log file.

- Typically, you will see a message such as "Error archiving metadata into catalog". You may also see some warning messages in the returned GIParameter list. You can disregard the warnings. If the problem occurred for an existing ESDT which has previously worked within the past day or two, then most likely STMGT is the culprit. Have someone from STMGT look at their log files, paying particular attention to changes/defects in their stored procedures.
- If you see the "Error archiving metadata into catalog" message and the ESDT is new or has recently been installed, then look at the .MCF file in the runtime directory. Get somebody from SDSRV to help you compare the values of the mandatory parameters in the metadata file with "valids" from the SDSRV database.
- "Error archiving metadata into catalog" may also be associated with a SDSRV temporary directory getting filled up.

A message that indicates "Error archiving files" means that SDSRV is having trouble getting Storage Management to place the file(s) in the archive. Contact a Storage Management person:

- to Verify that the Archive (AMASS) is up and functional.

- Check through their logs to see why the request for archiving failed.

It is possible that the mount point between the science processor and the Storage Management machine has been lost. Check to make sure that the file that is being de-staged can be seen on the Storage Management machine. The typical path for the mount point is: Name}

`/usr/ecs/{MODE}/CUSTOM/pdps/{science processor name}/data/DpPrRm/{Disk`

- A message that indicates "Error modifying file usage" means that the numberOfUsage column in DpPrFile for a particular file is at 0 and the software is trying to decrement it. This column is an increment/decrement counter and is not normally decremented more times than it is incremented when under software control. However, if someone manually changes the database then the value may get out of sync and need to be manually reset to 1.
- If you see science data files in the disk partition, but no metadata files, then DDIST/STMGT is okay and SDSRV is not okay. Otherwise, suspect STMGT.
- When the problem is corrected, re-start the job from AutoSys.

#### **26.17.5.9 All known problems are corrected and the re-start fails again**

The retry information in DpPrRpcID may now be out of sync between one or more servers. Find the appropriate entry in the table by inspecting the readableTag column and remove the entry before trying to re-start the job again.

#### **26.17.5.10 Non-PDPS servers are down**

Always verify that the Science Data Server, Storage Management Servers and Data Distribution Servers are up.

1. Bring up ECS ASSIST
2. Select the correct mode
3. Click on the "monitor" button
4. Click on "cdsping all servers"
5. Observe that the status for the following servers is "Listening":

**EcDmDictServer**  
**EcDpPrDeletion**  
**EcDpPrJobMgmt**  
**EcDsDistributionServer**  
**EcDsScienceDataServer (all instances)**  
**EcDsStArchiveServer**  
**EcDsStFtpDisServer**  
**EcDsStPullMonitorServer**  
**EcDsStStagingDiskServer**

**EcDsStStagingMontitorServer**  
**EcIoAdServer**  
**EcPISubMgr**  
**EcSbEventServer**  
**EcSbSubServer**

6.If any of these servers are down, contact the MSS operator to bring them up.

## **26.17.6 PDPS Troubleshooting - Job Activation Fails from the Planning Workbench**

### **Error reported is "DPR Validation Failed"**

- 1.Check to make sure that Performance data has been entered for the PGE
  - 1.Use the database browser or isql to get access to the PDPS database.
  - 2.Look at the entries for PIPerformance.
  - 3.For the PGE(s) that are schedule, verify there is a non-zero value for the entries in this table.
  - 4.If entries are 0, then run the SSIT Operational Metadata GUI to enter correct performance values.
  - 5.Delete the DPRs and then re-create them. Activation will succeed on the next attempt.

### **26.17.6.1 PDPS Troubleshooting - Input Data Problems**

General description of the problem:

- The Production Request fails due to too many granules
- The Staging Job has failed due to too many granules

#### **A Failure Due to Too Many Granules**

A failure of this sort is caused by too many granules meeting the criteria for input granules for a particular DPR. At PGE registration, the number of granules we expect for each input ESDT is defined. We define the minimum number and the maximum number of granules we expect. If the number of granules found is not between the minimum and maximum number, the request fails. This will fail either during production request time, or when the PCF File is generated (Autosys PreProcessing step).

#### **The Production Request fails due to too many granules**

The Production Request fails. The ALOG displays an error message as follows:

```
Msg: PIPge::GetInputForDpr - Extr input to process DPR MoPGE01#2007081600OPS, for data type id MOD000#001, with logical id 599001. PIDataTypeReq has a scienceGroup of for this datatype. Expected 2 max inputs, but got 3. Priority : 2
```

Time : 07/09/99 17:10:52

The problem in this case was that the Production Request Editor queried the PDPS database for granules that would satisfy the data needs for this DPR and found 3 granules instead of 2 like it expected. When we inspected the PDPS database (PIDataGranuleShort) we found only two entries that satisfied the data needs for this DPR. After some investigation, the true problem was discovered.

The DPR was for 16:00:00 - 18:00:00. This particular DPR takes in the current input granule (16:00:00-18:00:00) and the previous input granule (14:00:00- 16:00:00). When it inspects the PDPS Database for data granules, it "pads" the timeframe with a (5A) configurable percentage or (4PY) a hardcoded percentage - 50%. This was 4PY, so the PRE added 50% of the granule's expected time to each side of the time-range of the granules. This means that the PRE queried the PDPS database for granules that had start and stop times within 15:00:00 - 19:00:00. In this case, there was an invalid data granule with a start time of 15:30:00 - 15:59:59. This granule was found during the query and caused the PRE to find one too many granules and fail the PR.

**The Workaround:**

Delete the offending granule and recreate your production request.

**The Fix:**

For 5A, the padding that is added to each side of the range for the query is configurable. If the padding is decreased, these kinds of granules will not be found. In addition, there is a minimum size that a granule must be before the Planning system will recognize it as a valid granule. This is a percentage, and is hardcoded in 4PY to 20% (or so), but this is configurable in 5A. So in 5A we can set this value to 50% which will filter out all granules less than 1 hour long, and we can set the padding to 50% which will filter out granules that do not start before 15:00:00. Since our granules must be an hour long, and we can assume they do not overlap, we would not get any invalid granules such as this one.

**The PreProcessing Job has Failed due to Too Many Granules**

This condition is indicated when the Staging Job is red in AutoSys. This happens due to the same condition as noted above with the PRE, but the data granules came in after the Production Request was generated. The error message appears in the PGE log files and complains about not being able to generate the PCF file due to too many granules for a particular logical id.

**The Workaround:**

Delete the offending granule and the production request and recreate the production request.

**The Fix:**

See fix for the previous scenario.

**26.17.6.2 PDPS Troubleshooting - Jobs are activated, but do not get started in AutoSys**

The Job Management Server is down

The DPR is waiting in the AutoSys queue (never got released)

### Subscription Server Problems

The DPR was released but failed due to a JIL failure

The DPR was released but failed due to a AutoSys ID failure

The DPR was released but failed to be received by Job Management Server

**AutoSys is not functional**

AutoSys is full

### **The Job Management Server is down**

1. Bring up ECS ASSIST
2. Select the correct mode
3. Select DPS for the subsystem
4. Click on the "monitor" button
5. Observe that the status for the EcDpPrJobMgmt server is "UP"
6. If it is "down", then do steps 7 - 8
7. Click on the "start" button
8. Repeat steps 1-5

### **The DPR is waiting in the AutoSys queue (never got released)**

The Job Management server may have never received a ReleaseDprJob command from the PLS Subscription Manager

1. Check the database table, DpPrCreationQueue, to see if the job is still waiting to enter AutoSys. If it's in this table then it probably never got a ReleaseDprJob command from the PLS Subscription Manager, unless AutoSys is full)
2. Check the Job Management error log file to see if the ReleaseDprJob command was sent
3. If it was, then there may have been a JIL (AutoSys Job Information Language) processor problem -- a JIL FAILURE
4. If you can't find any evidence that the command was sent to Job Management, then the PLS Subscription Manager didn't send the ReleaseDprJob command. It won't send this command if it doesn't think all of the DPR's required inputs have been received. Verify this for yourself as follows:

- a. For regular DPRs (ie. one without optional inputs), check to see if all of the required inputs are present. First look at the PIDprData table and find all of the granule Ids with an ioFlag of 0 (an input granule) for this DPR. Then look at the UR column for each granule Id in PIDataGranule. If all of the input granules have URs (as opposed to granule Ids), then the Subscription Manager should have sent a ReleaseDprJob command to Job Management.

Look at the Subscription Manager log file to verify that it never, in fact, sent the ReleaseDprJob command.

- b. While you're looking at the Subscription Manager log file, check to see if it got a subscription notification from the

Subscription Server for any dynamic data that the DPR needs. If you believe that all of the necessary input files for

the DPR have been inserted by another DPR, then there may be Subscription Server Problems

c.If there are no Subscription Server Problems, all of the input granules for the DPR have URs and/or Subscription Manager received notification for all dynamic granules, then something may be wrong with the Subscription Manager. Check with somebody in the PLS subsystem.

### **The DPR was released but failed due to a JIL failure**

A "JIL Failure" means that the Job Management Server had some problem placing the DPR in AutoSys. The Job Interface Language processor rejected the create job command sent to it by the Job Management Server. If you look at the completionState column for the DPR in the PDPS PIDataProcessingRequest table, you will see "JIL\_FAILUR". There are 2 main reasons for this:

1. There is already a job with an identical name in AutoSys. Check this by going to the Ops Console, select View->Select Jobs and type a portion of the job name in the "Job Name" box, bracketed by the "\*" or "%" wildcard character. If the job is already in AutoSys, it must be removed by using the Production Request Editor or by using the Job Management Server Client tool (selectable from the Ops Console). Never delete a job from AutoSys using the job definition GUI. This will corrupt the PDPS database.
2. The event processor is down - AutoSys is not functional.
3. The job had a problem when it was loaded into AutoSys and a malformed or mutant job box is the result. This is a job box which will stay dark blue (meaning that it was not activated) and will be missing one of the seven job steps. To correct this problem you must do the following:
  - Delete the job from AutoSys by hand. To do this select the job from JobScope and right click. Select the Job Definition and then select Delete from the pop-up window. In general, it is bad practice to delete a job from Autosys using the Job Definition GUI. This can cause corruption in the PDPS database. But for this problem there is no other solution.
  - Update the completionStatus of the DPR in the PDPS database for which the mutant job box was created. You must do this via isql and set the completionStatus = NULL (using the isql update command).
  - Delete the DPR that maps to the job via the Production Request Editor. Note that you do not want to delete the entire Production Request, only the DPR that had the mutant Job Box. Any DPRs that depend on this DPR will also have to be deleted.
  - Re-create this DPR and any subsequent DPRs via the Production Request Editor.

### **The DPR was released but failed due to a AutoSys ID failure**

An "AutoSys ID" failure is indicated if the following messages appear in the Job Management ALOG file:

```
PID : 7668:MsgLink :0 meaningfulname :DpPrAutosysMapList::GetAutosysIDByDpr
```

Msg: unable to find autosys id for dpr: ACT#syn1#004130123DEV02 Priority: 2 Time : 03/09/99 11:33:51  
PID : 7668:MsgLink :9 meaningfulname :CantFindAutoSysId  
Msg: Unable to find autosys id Priority: 2 Time : 03/09/99 11:33:51  
PID : 7668:MsgLink :10 meaningfulname :DpPrSchedulerDObjSmainCreateFailed  
Msg: RqFailed=CreateDpr DprID=ACT#syn1#004130123DEV02 Priority: 2 Time : 03/09/99 11:33:51

An "AutoSys ID" Failure means that the Job Management server could not associate the AutoSys ID with the DPR that was activated. When the Job Management server is started it reads various tables in the PDPS database that provide the linkage between processing resources and AutoSys instance. If data is missing from these tables, or was added after the Job Management server was started, then the error shown above can occur when any jobs are activated by the Planning Workbench.

The following actions should be taken when an "AutoSys ID" failure error is reported:

1. Verify that the **PIResource** table in the PDPS database has at least 1 entry for a processing string and at least one entry for an AutoSys Instance. If either of these are missing, then you need to re-do Resource Planning and add them via the Resource Editor GUI.
2. Verify that the **PIRscString** table in the PDPS database has at least 1 entry and that autosysIdKey matches the entry in the PIResource table. Again, if information is missing or wrong, you need to re-do Resource Planning.
3. Verify that the **DpPrAutosysMapList** table in the PDPS database has at least 1 entry and that **resourceString and autosysIdKey** matches the entry in the **PIRscString** table. Yet again, if information is missing or wrong, you need to re-do Resource Planning.
4. If Resource Planning has been done after the Job Management server was brought up, then bounce the server. Since the server reads this information at start up, any changes since it was brought up will NOT have taken affect.

### **The DPR was released but failed to be received by Job Management Server**

In this case, the Planning Workbench thinks it successfully activated the DPR(s) but the Job Management Server had trouble receiving the notification.

Look for the following in the **EcDpPrJobMgmtDebug.log**:

Failed in CdsEntryRead

This indicates a problem with the communication and needs to be resolved by RTSC as a "problem with DCE". Things that you can do to confirm that this is a DCE problem:

- Run dce-verify on the machine where Job Management and Planning Workbench are executed. This should check the DCE communication service and find any errors.

- Check the Debug logs of other servers. If it is a global DCE problem, there should be errors in other server's logs such as "Invalid Bindings". When the above problem happened in the Functionality lab, all of the servers had multiple "Invalid Bindings" errors.

### **AutoSys is not functional**

1. Set the AutoSys environment variables by sourcing something that looks like  
`/data/autotreeb/autouser/AS1.autosys.csh,`  
 where AS1 is an autosys instance name.
2. type `chk_auto_up` and verify that you see the message: "Primary Event Processor is RUNNING on machine:  
 machine-name"
3. If you don't see that a Primary Event Processor is running, check with your AutoSys administrator.

Note that if Autosys will not stay up (**Autosys administrator brings it up and it goes down right away**) the following could be occurring:

- It may be possible that too many events were queued up to AutoSys while it was down. If Autosys detects a certain number of events in a short time period, it brings itself down. The only way to handle this is to keep bringing Autosys back up. Each time it will work through a few of the events before it detects "too many" and shuts down. Eventually the events will be cleared out and Autosys will stay up.
- It may be the sql server is not up for AutoSys (this may be a different server than the one needed for the PDPS database). Look for the following error messages in the AutoSys log or when you attempt to bring up JobScape:

**Couldn't create DBPROCES**

Unable to get encoded and plaintext passwords for l0sps03\_srvr:FMR

### **AutoSys is full**

This is an unlikely problem, and would only occur under the following conditions:

- The number of job boxes in the AutoSys instance > `DpPrAutoSysMaxJobs/8`. Look in `EcDpPrJobMgmt.CFG` to get this number.
- The DPR completionState in `PIDataProcessingRequest` is `CQ_RELEASE`.

What this means is that the Job Management Server got the command from Subscription Manager to release the job, but that no more jobs can fit into AutoSys at present. Wait for a DPR to finish, so that the next waiting one can be put into AutoSys.

## **26.17.6.3 PDPS Troubleshooting - SDSRV Troubleshooting**

### **How to examine the SDSRV Database**

1. Log into the Science Data Server (SDSRV) machine
2. Bring up ECS Assist

3. Select "Subsystem Manager"
4. Select "ESDT Manager"
5. Select "DB Viewer"
6. Click on Login

7. A list of data types will appear. Click on the data type and information about all granules in the archive will be displayed.

## **PDPS Troubleshooting - Quick Tips**

Job Management fails with a "JIL FAILURE" in the .ALOG file when trying to cancel a job in AutoSys

Use AutoSys Job Definition to see who owns the job.

Then select "Adv Features" to see if the user who is trying to delete the job is in the same group for "Edit Dfn" as the user who owns the job.

A quick fix is to give the job world "Edit Dfn", but generally, whoever starts the Job Management Server should be in the same group as the person using the tool to cancel the DPR.

## **26.18 DPREP**

### **26.18.1 Introduction**

This section contains information to schedule and run Terra DPREP.

- 4 Terra DPREP is made up of three PGE's that this document refers to and each are run separately. The PGE's are titled Step1 DPREP, Step 2 DPREP and Step 3 DPREP.
- 5 The input files come from INGEST. These files are depicted in the three step DPREP process in **Figure 26.18.1-1**
- 6 The output files generated from each of the DPREP PGE's contains Ancillary Attitude, and Ephemeris data that becomes new inputs to Instrument PGE's. These Instrument PGE's will then process its satellite data with similar time span files created by DPREP.
- 7 The DPREP registration process for each of the three PGE's creates in the Science Data Server Archive a subscription for each of the DPREP PGE's. PGE execution then takes place in the PDPS.
- 8 The SSI&T effort for DPREP PGE's is similar in effort to what would be required to register any other PGE.

### **26.18.2 SSI&T Activity for DPREP**

The Level Zero datasets are received in 2 hour chunks. The file processes in Figure 26.18.1-1 depicts the minimal time span allowable for a DPREP run. In a normal operation of DPREP, a twenty four hour time span would be prepared for. This would require additional 2 hour chunks and thus additional files of data would need to be registered. Before the registration process can take place a number of files will have to be updated to process a block of data for a particular

time period. Therefore, DPREP input files will have to be identified and various templates for the SSI&T process will require annotation.

The sections that follow have been highlighted with notations as to what SSI&T process applies in the preparation of each template and the function required to register each section. With a particular function identified, other portions of this manual can be referred to for more detailed procedures to be used to carry out the full SSI&T process.

Whenever new input files are introduced or updated executables are re-introduced it is wise to set up the PGE to run from the Command Line. This will determine if what has been introduced will run error free. After a successful Command Line run it is advisable then to complete the SSI&T effort to run from the PDPS. Command Line Runs include the use of the PCF to run from in the Science Data Server. PDPS runs include ESDT's and ODL files to generate internal PCF's.

## DPREP File Processes

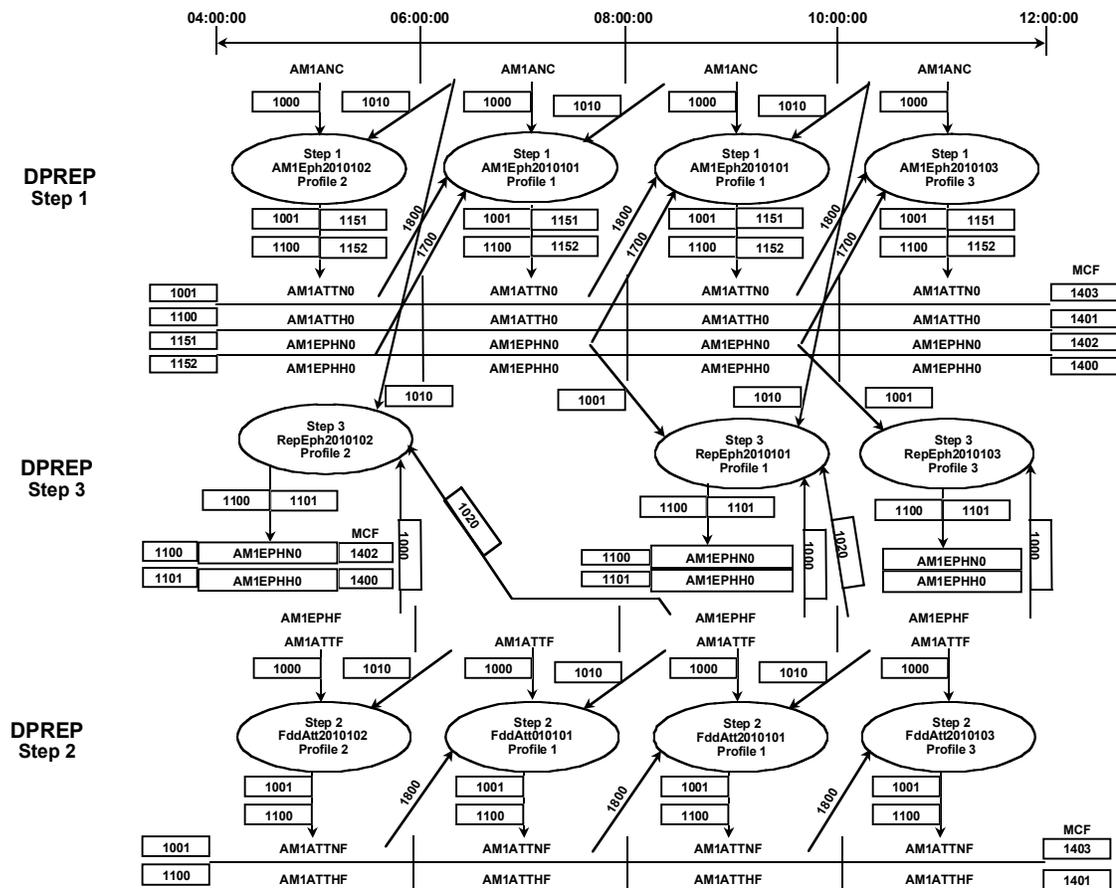


Figure 26.18.1-1. DPREP File Processes

### 26.18.3 DPREP Processes and Procedures

Processes and procedures are provided in the following files on an SGI machine used to support SSI&T:

DPREP README and HowToRunDPREP files located at  
**:/usr/ecs/OPS/CUSTOM/data/DPS/**

DPREP binary located: **:/usr/ecs/OPS/CUSTOM/bin/DPS/**

The following files are taken from an SSI&T SGI machine using the /data/DPS/ thread for referencing DPREP files in this section.

:

```
p0spg01:/usr/ecs/OPS/CUSTOM/data/DPS[45] > ls -lrt
```

**total 10080**

```
-rwxr-xr-x 1 cmops cmops 15390 Dec 15 04:02 PGS_101
```

```
-rwxr-xr-x 1 cmops cmops 16315 Dec 15 04:02 HowToRunDPREP
```

```
-rwxr-xr-x 1 cmops cmops 3371 Dec 15 04:02 HowToCreateDprepTarFile
```

```
-rwxr-xr-x 1 cmops cmops 384 Dec 15 04:02
```

**EDOS\_LEVEL\_ZERO\_00.Profile\_1.A**

```
-rwxr-xr-x 1 cmops cmops 450048 Dec 15 04:02
```

**EDOS\_LEVEL\_ZERO\_01.Profile\_1.B**

```
-rwxr-xr-x 1 cmops cmops 449984 Dec 15 04:02
```

**EDOS\_LEVEL\_ZERO\_01.Profile\_1.A**

```
-rwxr-xr-x 1 cmops cmops 384 Dec 15 04:02
```

**EDOS\_LEVEL\_ZERO\_00.Profile\_2**

```
-rwxr-xr-x 1 cmops cmops 384 Dec 15 04:02
```

**EDOS\_LEVEL\_ZERO\_00.Profile\_1.B**

```
-rwxr-xr-x 1 cmops cmops 449984 Dec 15 04:02
```

**EDOS\_LEVEL\_ZERO\_01.Profile\_3**

```
-rwxr-xr-x 1 cmops cmops 449984 Dec 15 04:02
```

**EDOS\_LEVEL\_ZERO\_01.Profile\_2**

```
-rwxr-xr-x 1 cmops cmops 384 Dec 15 04:02
```

**EDOS\_LEVEL\_ZERO\_00.Profile\_4**

```

-rwxr-xr-x 1 cmops cmops 384 Dec 15 04:02
EDOS_LEVEL_ZERO_00.Profile_3
-rwxr-xr-x 1 cmops cmops 449984 Dec 15 04:02
EDOS_LEVEL_ZERO_01.Profile_4
-rwxr-xr-x 1 cmops cmops 225248 Dec 15 04:02
AM1_DEFINITIVE_ATT.fdd.Profile_3
-rwxr-xr-x 1 cmops cmops 225248 Dec 15 04:02
AM1_DEFINITIVE_ATT.fdd.Profile_2
-rwxr-xr-x 1 cmops cmops 225280 Dec 15 04:02
AM1_DEFINITIVE_ATT.fdd.Profile_1.B
-rwxr-xp0spg01:/usr/ecs/OPS/CUSTOM/data/DPS[45] > ls -lrt
total 10080
-rwxr-xr-x 1 cmops cmops 15390 Dec 15 04:02 PGS_101
-rwxr-xr-x 1 cmops cmops 16315 Dec 15 04:02 HowToRunDPREP
-rwxr-xr-x 1 cmops cmops 3371 Dec 15 04:02 HowToCreateDprepTarFile
-rwxr-xr-x 1 cmops cmops 384 Dec 15 04:02
EDOS_LEVEL_ZERO_00.Profile_1.A
-rwxr-xr-x 1 cmops cmops 450048 Dec 15 04:02
EDOS_LEVEL_ZERO_01.Profile_1.B
-rwxr-xr-x 1 cmops cmops 449984 Dec 15 04:02
EDOS_LEVEL_ZERO_01.Profile_1.A
-rwxr-xr-x 1 cmops cmops 384 Dec 15 04:02
EDOS_LEVEL_ZERO_00.Profile_2
-rwxr-xr-x 1 cmops cmops 384 Dec 15 04:02
EDOS_LEVEL_ZERO_00.Profile_1.B
-rwxr-xr-x 1 cmops cmops 449984 Dec 15 04:02
EDOS_LEVEL_ZERO_01.Profile_3

```

**-rwxr-xr-x 1 cmops cmops 449984 Dec 15 04:02**  
**EDOS\_LEVEL\_ZERO\_01.Profile\_2**

**-rwxr-xr-x 1 cmops cmops 384 Dec 15 04:02**  
**EDOS\_LEVEL\_ZERO\_00.Profile\_4**

**-rwxr-xr-x 1 cmops cmops 384 Dec 15 04:02**  
**EDOS\_LEVEL\_ZERO\_00.Profile\_3**

**-rwxr-xr-x 1 cmops cmops 449984 Dec 15 04:02**  
**EDOS\_LEVEL\_ZERO\_01.Profile\_4**

**-rwxr-xr-x 1 cmops cmops 225248 Dec 15 04:02**  
**AM1\_DEFINITIVE\_ATT.fdd.Profile\_3**

**-rwxr-xr-x 1 cmops cmops 225248 Dec 15 04:02**  
**AM1\_DEFINITIVE\_ATT.fdd.Profile\_2**

**-rwxr-xr-x 1 cmops cmops 225280 Dec 15 04:02**  
**AM1\_DEFINITIVE\_ATT.fdd.Profile\_1.B**

**-rwxr-xr-x 1 cmops cmops 225248 Dec 15 04:02**  
**AM1\_DEFINITIVE\_ATT.fdd.Profile\_1.A**

**-rwxr-xr-x 1 cmops cmops 411600 Dec 15 04:03**  
**AM1\_REPAIR\_EPH.fdd.Profile\_2**

**-rwxr-xr-x 1 cmops cmops 411600 Dec 15 04:03**  
**AM1\_REPAIR\_EPH.fdd.Profile\_1**

**-rwxr-xr-x 1 cmops cmops 225248 Dec 15 04:03**  
**AM1\_DEFINITIVE\_ATT.fdd.Profile\_4**

**-rwxr-xr-x 1 cmops cmops 411600 Dec 15 04:03**  
**AM1\_REPAIR\_EPH.fdd.Profile\_3**

**-rwxr-xr-x 1 cmops cmops 1655 Dec 15 04:03 AM1ANC.Profile\_4.met**

**-rwxr-xr-x 1 cmops cmops 1655 Dec 15 04:03 AM1ANC.Profile\_3.met**

**-rwxr-xr-x 1 cmops cmops 1655 Dec 15 04:03 AM1ANC.Profile\_2.met**

-rwxr-xr-x 1 cmops cmops 1655 Dec 15 04:03 AM1ANC.Profile\_1.B.met  
-rwxr-xr-x 1 cmops cmops 1655 Dec 15 04:03 AM1ANC.Profile\_1.A.met  
-rwxr-xr-x 1 cmops cmops 1679 Dec 15 04:03  
AM1\_DEFINITIVE\_ATT.fdd.Profile\_4.met  
r-x 1 cmops cmops 225248 Dec 15 04:02  
AM1\_DEFINITIVE\_ATT.fdd.Profile\_1.A  
-rwxr-xr-x 1 cmops cmops 411600 Dec 15 04:03  
AM1\_REPAIR\_EPH.fdd.Profile\_2  
-rwxr-xr-x 1 cmops cmops 411600 Dec 15 04:03  
AM1\_REPAIR\_EPH.fdd.Profile\_1  
-rwxr-xr-x 1 cmops cmops 225248 Dec 15 04:03  
AM1\_DEFINITIVE\_ATT.fdd.Profile\_4  
-rwxr-xr-x 1 cmops cmops 411600 Dec 15 04:03  
AM1\_REPAIR\_EPH.fdd.Profile\_3  
-rwxr-xr-x 1 cmops cmops 1655 Dec 15 04:03 AM1ANC.Profile\_4.met  
-rwxr-xr-x 1 cmops cmops 1655 Dec 15 04:03 AM1ANC.Profile\_3.met  
-rwxr-xr-x 1 cmops cmops 1655 Dec 15 04:03 AM1ANC.Profile\_2.met  
-rwxr-xr-x 1 cmops cmops 1655 Dec 15 04:03 AM1ANC.Profile\_1.B.met  
-rwxr-xr-x 1 cmops cmops 1655 Dec 15 04:03 AM1ANC.Profile\_1.A.met  
-rwxr-xr-x 1 cmops cmops 1679 Dec 15 04:03  
AM1\_DEFINITIVE\_ATT.fdd.Profile\_4.met  
-rwxr-xr-x 1 cmops cmops 1679 Dec 15 04:03  
AM1\_DEFINITIVE\_ATT.fdd.Profile\_3.met  
-rwxr-xr-x 1 cmops cmops 1679 Dec 15 04:03  
AM1\_DEFINITIVE\_ATT.fdd.Profile\_2.met  
-rwxr-xr-x 1 cmops cmops 1679 Dec 15 04:03  
AM1\_DEFINITIVE\_ATT.fdd.Profile\_1.B.met

-rwxr-xr-x 1 cmops cmops 1679 Dec 15 04:03  
AM1\_DEFINITIVE\_ATT.fdd.Profile\_1.A.met

-rwxr-xr-x 1 cmops cmops 5909 Dec 15 04:03 ReplaceEphemeris.tar.met

-rwxr-xr-x 1 cmops cmops 5909 Dec 15 04:03 FDDAttitude.tar.met

-rwxr-xr-x 1 cmops cmops 29206 Dec 15 04:03  
EcDpPrAm1EdosEphAttDPREP\_PGE.Steps1ab.PCF.Profile\_3

-rwxr-xr-x 1 cmops cmops 29299 Dec 15 04:03  
EcDpPrAm1EdosEphAttDPREP\_PGE.Steps1ab.PCF.Profile\_2

-rwxr-xr-x 1 cmops cmops 29818 Dec 15 04:03  
EcDpPrAm1EdosEphAttDPREP\_PGE.Steps1ab.PCF.Profile\_1.B

-rwxr-xr-x 1 cmops cmops 29818 Dec 15 04:03  
EcDpPrAm1EdosEphAttDPREP\_PGE.Steps1ab.PCF.Profile\_1.A

-rwxr-xr-x 1 cmops cmops 1663 Dec 15 04:03  
AM1\_REPAIR\_EPH.fdd.Profile\_3.met

-rwxr-xr-x 1 cmops cmops 1663 Dec 15 04:03  
AM1\_REPAIR\_EPH.fdd.Profile\_2.met

-rwxr-xr-x 1 cmops cmops 1663 Dec 15 04:03  
AM1\_REPAIR\_EPH.fdd.Profile\_1.met

-rwxr-xr-x 1 cmops cmops 5909 Dec 15 04:03  
AM1\_Ancillary\_DPREP.tar.met

-rwxr-xr-x 1 cmops cmops 27664 Dec 15 04:03  
EcDpPrAm1FddEphemerisDPREP\_PGE.Step3.PCF.Profile\_2

-rwxr-xr-x 1 cmops cmops 27944 Dec 15 04:03  
EcDpPrAm1FddEphemerisDPREP\_PGE.Step3.PCF.Profile\_1

-rwxr-xr-x 1 cmops cmops 26902 Dec 15 04:03  
EcDpPrAm1FddAttitudeDPREP\_PGE.Step2.PCF.Profile\_4

-rwxr-xr-x 1 cmops cmops 27257 Dec 15 04:03

**EcDpPrAm1FddAttitudeDPREP\_PGE.Step2.PCF.Profile\_3**

**-rwxr-xr-x 1 cmops cmops 27184 Dec 15 04:03**

**EcDpPrAm1FddAttitudeDPREP\_PGE.Step2.PCF.Profile\_2**

**-rwxr-xr-x 1 cmops cmops 27543 Dec 15 04:03**

**EcDpPrAm1FddAttitudeDPREP\_PGE.Step2.PCF.Profile\_1.B**

**-rwxr-xr-x 1 cmops cmops 27543 Dec 15 04:03**

**EcDpPrAm1FddAttitudeDPREP\_PGE.Step2.PCF.Profile\_1.A**

**-rwxr-xr-x 1 cmops cmops 28695 Dec 15 04:03**

**EcDpPrAm1EdosEphAttDPREP\_PGE.Steps1ab.PCF.Profile\_4**

**-rwxr-xr-x 1 cmops cmops 26584 Dec 15 04:03**

**EcDpPrAm1FddEphemerisDPREP\_PGE.Step3.PCF.Profile\_3**

**-rwxr-xr-x 1 cmops cmops 5617 Dec 15 04:03 DPREP\_README**

**-rw-rw-r-- 1 cmshared cmshared 433 Dec 15 15:35 ODL**

**p0spg01:/usr/ecs/OPS/CUSTOM/data/DPS[46] >**

**data3/ecs/OPS/CUSTOM/data/DPS**

### **26.18.3.1 DPREP consists of three PGE's each run separately.**

**1** The first step is a **ksh** script called **EcDpPrAm1EdosEphAttDPREP\_PGE**, which serves as a driver for three executables:

- EcDpPrAm1EdosAncillary
- EcDpPrAm1EdosEphemerisRepair
- EcDpPrAm1ToolkitHdf

**2** The second step is **EcDpPrAm1FddAttitudeDPREP\_PGE**.

**3** The third step is **EcDpPrAm1FddEphemerisDPREP\_PGE**.

#### **STEP ONE**

**EcDpPrAm1EdosAncillary** reads in AM-1 L0 (EDOS) Ancillary Dataset (logical id 1000, ESDT AM1ANC). It also reads another set of AM-1 L0 (EDOS) Ancillary Dataset (logical id 1010, ESDT AM1ANC). The second set of L0 data is required to insure that incomplete orbits in the first data set get complete orbit metadata records. The only data that will be extracted from the second data set is the descending node time and longitude.

**EcDpPrAm1EdosAncillary** also reads in ephemeris and attitude data (toolkit native format) under logical ids 1700 (ESDT AM1EPHN0) and 1800 (ESDT AM1ATTN0). These would be the last ephemeris/attitude data sets generated from a previous run of this PGE.

### **EcDpPrAm1EdosEphemerisRepair**

If EcDpPrAm1EdosAncillary signals a short gap was detected then EcDpPrAm1EdosEphemerisRepair reads the scratchfile created by EcDpPrAm1EdosAncillary and performs the gap fill and writes a gap filled native format ephemeris file. If no short gap is signaled then the scratch file is simply renamed to the native format ephemeris file.

### **EcDpPrAm1ToolkitHdf**

This process takes the native format ephemeris file and produces a corresponding HDF file and a metadata file.

This PGE produces Toolkit and HDF format attitude and ephemeris data sets. The attitude data sets are produced using logical ids 1001 (ESDT AM1ATTN0) and 1100 (ESDT AM1ATTH0). The ephemeris data sets are produced using logical ids 1101 (ESDT AM1EPHN0) and 1102 (ESDT AM1EPHH0). The corresponding MCFs are accessed using logical ids 1400 (ESDT AM1EPHH0), 1401 (ESDT AM1ATTH0), 1402 (ESDT AM1EPHN0) and 1403 (ESDT AM1ATTN0).

The PGE produces an ASCII report file under logical id 2000

EcDpPrAm1EdosEphAttDPREP\_PGE.Steps1ab.PCF.curr is a sample pcf used by this PGE.

This pcf has directory locations and file names which may not be valid in all environments. Be careful before directly using this pcf. A sample set of input files for this PGE are

1000 EDOS\_LEVEL\_ZERO\_00.curr

1000 EDOS\_LEVEL\_ZERO\_01.curr

1010 EDOS\_LEVEL\_ZERO\_00.next

1010 EDOS\_LEVEL\_ZERO\_01.next

and a copy of each of these files is provided. The files in this group do contain small data gaps which will cause EcDpPrAm1EdosEphemerisRepair to be run.

The remaining pcfs for Step 1 DPREP:

### **EcDpPrAm1EdosEphAttDPREP\_PGE.Steps1ab.PCF.next**

### **EcDpPrAm1EdosEphAttDPREP.Steps1ab.PCF.next\_1**

will move through the sequence of the Level Zero files provided.

example; EDOS\_LEVEL\_ZERO\_00.next is treated as current and

EDOS\_LEVEL\_ZERO\_00.next\_1 is treated as next etc...

These pcfs can be utilized at the testers discretion and are not necessary for the running of steps 2 and 3. The input files indicated in EcDpPrAm1EdosEphAttDPREP.Steps1ab.PCF.next\_1 contain no gaps so testers shouldn't be concerned that EcDpPrAm1EdosEphemerisRepair is not invoked when using this pcf.

Note:

The Level Zero datasets are received in 2 hour chunks but processing can't be performed on the most recently available 2 hour chunk. Step 1 processing needs to look forward in the time stream in order to complete orbit metadata processing.

## **STEP TWO**

**EcDpPrAm1FddAttitudeDPREP\_PGE** reads in the current FDD Attitude Dataset under logical ID 1000 and the next FDD Attitude Dataset under logical ID 1010. It also reads in the attitude data set it produced with it's last run under logical ID 1502. The output of this process is a native format attitude file (logical ID 1001) and an HDF format attitude file (logical ID 1100). A .met file is also produced for each.

EcDpPrAm1FddAttitudeDPREP\_PGE.Step2.PCF.curr is a sample pcf used by this PGE. This pcf has directory locations and file names which may not be valid in all environments. Be careful before directly using this pcf. A sample set of input files for this PGE are

1000 AM1\_DEFINITIVE\_ATT.fdd.curr

1010 AM1\_DEFINITIVE\_ATT.fdd.next

(IMPORTANT: These files contain incorrect data and were delivered only as a placeholder. EcDpPrAm1FddAttitudeDPREP\_PGE will not run with these files as input. When valid FDD Definitive Attitude files become available they should be moved to these filenames and EcDpPrAm1FddAttitudeDPREP\_PGE should run successfully. )  
and a copy of each of these files is provided.

Note: Step 2 processing must follow 2 hours behind step 1 processing.

### **STEP THREE**

If step1 finds too many missing data points in the ephemeris data it signals that a definitive ephemeris file is needed from FDD which EcDpPrAm1FddEphemerisDPREP\_PGE will use to replace the ephemeris dataset that was generated from the Level Zero data.

EcDpPrAm1FddEphemerisDPREP\_PGE reads in the definitive Ephemeris dataset received from FDD (logical ID 1000) and the EOS\_AM1 Ephemeris data (logical id 1001) in toolkit native format.

It produces Replacement ephemeris datasets (logical id 1101, ESDT AM1EPHH0) and (logical id 1100, ESDT AM1EPHN0). The corresponding MCFs are accessed using logical ids 1400 (ESDT AM1EPHH0) & 1402 (ESDT AM1EPHN0)

**EcDpPrAm1FddEphemerisDPREP\_PGE.Step3.PCF.curr** is a sample pcf used by this PGE. This pcf has directory locations and file names which may not be valid in all environments. Be careful before directly using this pcf. A sample FDD input file for this PGE is

1000 AM1\_REPAIR\_EPH.fdd

and a copy of this file is provided.

Toolkit Initialization Settings

SGI Application Binary Interface New 32

Disk Space Used for PGE Run 50.000 MB

Shared Memory ON

Use Test Files if SM Fails ON

Use Log Files ON

Continue if Logging Fails OFF

### **26.18.4 Creating DPREP Tar Files**

If tar files are not available for registering the three AM-1 DPREP PGEs,

Follow the instructions found in the HowToCreateDprepTarFiles file to generate the necessary tar files.

#### **26.18.4.1 HowToCreateDprepTarFiles**

**p0spg01:/usr/ecs/OPS/CUSTOM/data/DPS[46] > more HowToCreateDprepTarFile**

This file provides information to create the DPREP pge tar files

Objective : To create AM1\_Ancillary\_DPREP.tar & FddAttitude.tar  
and using SSIT Manager archive the PGE tar files

**Files needed :**

**PGS\_101**  
**EcDpPrAm1EdosEphAttDPREP\_PGE**  
**EcDpPrAm1EdosAncillary**  
**EcDpPrAm1EdosEphemerisRepair**  
**EcDpPrAm1ToolkitToHdf**  
**EcDpPrAm1FddAttitudeDPREP\_PGE**  
**EcDpPrAm1FddEphemerisDPREP\_PGE**

**Steps to create AM1\_Ancillary\_DPREP.tar**

---

1. Login to the science processing machine (SGI)
2. Check to make sure that the executables  
**EcDpPrAm1EdosEphAttDPREP\_PGE**  
**EcDpPrAm1EdosAncillary**  
**EcDpPrAm1EdosEphemerisRepair**  
**EcDpPrAm1ToolkitToHdf**  
are delivered and reside in **\$ECS\_HOME/<MODE>/CUSTOM/bin/DPS**
3. Check to make sure that the data file **PGS\_101** is delivered and resides in **\$ECS\_HOME/<MODE>/CUSTOM/data/DPS**

4. **cd to \$ECS\_HOME/<MODE>/CUSTOM/data/DPS**
5. **/bin/tar cvf AM1\_Ancillary\_DPREP.tar PGS\_101 -C**  
**\$ECS\_HOME/<MODE>/CUSTOM/bin/DPS EcDpPrAm1EdosAncillary**  
**EcDpPrAm1EdosEphAttDPREP\_PGE**  
**EcDpPrAm1EdosEphemerisRepair EcDpPrAm1ToolkitToHdf**

Step 5 will create the **AM1\_Ancillary\_DPREP.tar** file in  
**\$ECS\_HOME/<MODE>/CUSTOM/data/DPS**

This file then needs to be ftped to the SSIT machine from where it  
will be archived

The corresponding met file for this tar file is **AM1\_Ancillary\_DPREP.tar.met**  
and is delivered to **\$ECS\_HOME/<MODE>/CUSTOM/data/DPS**

This file then needs to be ftped to the SSIT machine from where it  
(and the tar file itself) will be archived

**Steps to create FddAttitude.tar**

---

1. Login to the science processing machine (SGI)
2. Check to make sure that the executable **EcDpPrAm1FddAttitudeDPREP\_PGE**  
is delivered and resides in **\$ECS\_HOME/<MODE>/CUSTOM/bin/DPS**

3. Check to make sure that the data file **PGS\_101** is delivered and resides in **\$ECS\_HOME/<MODE>/CUSTOM/data/DPS**

4. **cd** to **\$ECS\_HOME/<MODE>/CUSTOM/data/DPS**

5. **/bin/tar cvf FDDAttitude.tar PGS\_101 -C \$ECS\_HOME/<MODE>/CUSTOM/bin/DPS EcDpPrAm1FddAttitudeDPREP\_PGE**

Step 5 will create the **FDDAttitude.tar** file in **\$ECS\_HOME/<MODE>/CUSTOM/data/DPS**

This file then needs to be ftped to the SSIT machine from where it will be archived

The corresponding met file for this tar file is **FDDAttitude.tar.met** and is delivered to **\$ECS\_HOME/<MODE>/CUSTOM/data/DPS**

This file then needs to be ftped to the SSIT machine from where it (and the corresponding tar file) will be archived.

### **Steps to create ReplaceEphemeris.tar**

---

1. **Login to the science processing machine (SGI)**

2. Check to make sure that the executable **EcDpPrAm1FddEphemerisDPREP\_PGE** is delivered and resides in **\$ECS\_HOME/<MODE>/CUSTOM/bin/DPS**

3. Check to make sure that the data file **PGS\_101** is delivered and resides in **\$ECS\_HOME/<MODE>/CUSTOM/data/DPS**

4. **cd** to **\$ECS\_HOME/<MODE>/CUSTOM/data/DPS**

5. **/bin/tar cvf ReplaceEphemeris.tar PGS\_101 -C \$ECS\_HOME/<MODE>/CUSTOM/bin/DPS**

**EcDpPrAm1FddEphemerisDPREP\_PGE**

Step 5 will create the **ReplaceEphemeris.tar** file in **\$ECS\_HOME/<MODE>/CUSTOM/data/DPS**

This file then needs to be ftped to the SSIT machine from where it will be archived

The corresponding met file for this tar file is **ReplaceEphemeris.tar.met** and is delivered to **\$ECS\_HOME/<MODE>/CUSTOM/data/DPS**

This file then needs to be ftped to the SSIT machine from where it (and the corresponding tar file) will be archived.

---

### **26.18.4.2 HowToRunDPREP**

**p0spg01:/usr/ecs/OPS/CUSTOM/data/DPS[48] > more HowToRunDPREP**

This document contains information on how to schedule and run **AM-1 DPREP**

**AM-1 DPREP** is made up of **3 PGEs** that this document refers to as **Step 1 DPREP**, **Step 2 DPREP**, and **Step 3 DPREP**:

**Step 1 DPREP** is the **EDOS**-supplied ephemeris and attitude preprocessor.

**Step 2 DPREP** is the **FDD**-supplied attitude preprocessor.

**Step 3 DPREP** is the **FDD**-supplied ephemeris preprocessor.

Operationally, Steps 1 and 2 are scheduled daily and run independently of one another. Step 3 is scheduled and run on an as-needed basis.

In order to run, **DPREP** processing expects data to be available not only from the current segment, but also from the preceding and following segments as well. Data from the preceding and following segments are used to consistency check ephemeris and attitude data streams when the data streams bridge segment boundaries. The availability of data from the preceding and following segments is not guaranteed, however. Four data processing profiles have been developed to handle the various permutations of preceding and following data segments that could be available to **DPREP**:

**Profile 1** expects data from the preceding, current, and following segments.

**Profile 2** expects data from the current and following segments only.

**Profile 3** expects data from the preceding and current segments only.

**Profile 4** expects data from the current segment only.

These profiles are recognized by all **DPREP Steps**. The **ESDT** that is provided to **DPREP** from the preceding, current, and following data segments depends on the Step being run, however.

**Profile 2** (no preceding data, but following data is available) initializes **DPREP's** processing of a given Step's ephemeris and/or attitude data stream. **Once Profile 2** has been run on a data segment, **Profile 1** (preceding and following data available) assumes processing responsibility on all data segments thereafter until data dropout or mission end is encountered. **Profile 3** (preceding data available, but no following data) then processes data segment that immediately precedes data dropout and, therefore, terminates processing on a given Step's ephemeris and/or attitude data stream.

In the big picture then, **DPREP** processing requires a single **Profile 2** to run on the first data segment, is followed by an indeterminate number of **Profile 1** processes, and is terminated by a single **Profile 3** process.

**Profile 4** processes isolated data segments and is not likely to be scheduled operationally.

More information on the **AM-1 DPREP** can be found in document "**TERRA Spacecraft Ephemeris and Attitude Data Preprocessing**" (document number **184-TP-001-001**).

Note: Each PGE will use both the **Science Metadata update tool** and the **Operational Metadata Update tool**, which are located in the **SSIT Manager**, to incorporate the specific parameters listed in each of the direction sections below.

### 26.18.4.3 Registering DPREP PGEs

So that the following tests can be conducted, all four Profiles must be registered for all three DPREP Steps. Each DPREP PGE is registered once.

#### Step 1 DPREP Test Instructions

---

For Step 1, **current** and **following** granules are EDOS-supplied L0 Ancillary (APID 4, ShortName AM1ANC), the preceding granule is the output Toolkit format ephemeris and attitude products produced by the preceding run of Step 1 (ShortNames AM1EPHN0, AM1ATTN0). DPREP expects both the L0 Ancillary header granule and the data granule (hence, 2 granules) for the current and following L0 Ancillary. Step 1 requires 2 preceding data sets, one ephemeris product and one attitude product from the preceding Step 1 run (two granules, one for ephemeris and one for attitude).

#### Step 1 DPREP Specifications

Tar File Name : \$SECS\_HOME/<MODE>/CUSTOM/data/DPS/AM1\_Ancillary\_DPREP.tar

Contents : EcDpPrAm1EdosEphAttDPREP\_PGE

EcDpPrAm1EdosAncillary

EcDpPrAm1EdosEphemerisRepair

EcDpPrAm1ToolkitToHdf

PGS\_101

PGE Met File :

\$SECS\_HOME/<MODE>/CUSTOM/data/DPS/AM1\_Ancillary\_DPREP.tar.met

Top Level Exe : EcDpPrAm1EdosEphAttDPREP\_PGE

PGE Name : AM1Eph

Version Number : 20202

Profile 1 ODL : PGE\_AM1Eph#2020101.odl

Profile 2 ODL : PGE\_AM1Eph#2020102.odl

Profile 3 ODL : PGE\_AM1Eph#2020103.odl

Profile 4 ODL : PGE\_AM1Eph#2020104.odl

#### Test Scenario

The Step 1 DPREP test is divided into two parts. The first part exercises Profiles 1, 2, and 3 over four consecutive data segments. The first data segment is scheduled for Profile 2 processing, the next two segments are scheduled for Profile 1 processing, and the last scheduled for Profile 3 processing. The data segments to be processed follow.

Segment 1: 1997 July 31 04:00:00 to 1997 July 31 06:00:00 (Profile 2)  
Segment 2: 1997 July 31 06:00:00 to 1997 July 31 08:00:00 (Profile 1)  
Segment 3: 1997 July 31 08:00:00 to 1997 July 31 10:00:00 (Profile 1)  
Segment 4: 1997 July 31 10:00:00 to 1997 July 31 12:00:00 (Profile 3)

The second Step 1 DPREP test exercises Profile 4 on an isolated data segment.

Segment 5: 1997 July 31 18:00:00 to 1997 July 31 20:00:00 (Profile 4)

There is one dynamic granule (2 files for each granule) for each of the data segments described above. Insert all five dynamic granules into the archive using the SSIT Manager's insert dynamic data tool.

**Segment 1:**

ESDT Short Name : AM1ANC  
File Names : EDOS\_LEVEL\_ZERO\_00.Profile\_2  
EDOS\_LEVEL\_ZERO\_01.Profile\_2  
Met file : AM1ANC.Profile\_2.met  
Time Range : 1997 July 31 04:00:00 to 1997 July 31 06:00:00

**Segment 2:**

ESDT Short Name : AM1ANC  
File Names : EDOS\_LEVEL\_ZERO\_00.Profile\_1.A  
EDOS\_LEVEL\_ZERO\_01.Profile\_1.A  
Met file : AM1ANC.Profile\_1.A.met  
Time Range : 1997 July 31 06:00:00 to 1997 July 31 08:00:00

**Segment 3:**

ESDT Short Name : AM1ANC  
File Names : EDOS\_LEVEL\_ZERO\_00.Profile\_1.B  
EDOS\_LEVEL\_ZERO\_01.Profile\_1.B  
Met file : AM1ANC.Profile\_1.B.met  
Time Range : 1997 July 31 08:00:00 to 1997 July 31 10:00:00

**Segment 4:**

ESDT Short Name : AM1ANC  
File Names : EDOS\_LEVEL\_ZERO\_00.Profile\_3  
EDOS\_LEVEL\_ZERO\_01.Profile\_3  
Met file : AM1ANC.Profile\_3.met  
Time Range : 1997 July 31 10:00:00 to 1997 July 31 12:00:00

**Segment 5:**

ESDT Short Name : AM1ANC  
 File Names : EDOS\_LEVEL\_ZERO\_00.Profile\_4  
                   EDOS\_LEVEL\_ZERO\_01.Profile\_4  
 Met file : AM1ANC.Profile\_4.met  
 Time Range : 1997 July 31 18:00:00 to 1997 July 31 20:00:00

Create three production requests for the following time ranges. The number of DPRs that should be created are given below.

Request	Timespan	Profile	DPRs
1	1997 July 31 04:00:00 to 06:00:00	2	1
2	1997 July 31 06:00:00 to 10:00:00	1	2
3	1997 July 31 10:00:00 to 12:00:00	3	1

Schedule all three production requests to run as a single production plan. This completes the first part of the Step 1 DPREP test.

Next, create one production request that for the time range that follow.

Request	Timespan	Profile	DPRs
1	1997 July 31 18:00:00 to 20:00:00	4	1

Schedule this a separate production plan. This completes the second part of the Step 1 DPREP test.

### Results

Find output granules for each of the timespans described above for ESDTs AM1EPHN0, AM1EPHH0, AM1ATTN0, and AM1ATTH0. ESDT AM1EPHN0 is the Toolkit format ephemeris granule, while ESDT AM1EPHH0 is the HDF format ephemeris granule. ESDT AM1ATTN0 is the Toolkit format attitude granule, while ESDT AM1ATTH0 is the HDF format attitude granule.

### Step 2 DPREP Test Instructions

---

For Step 2, current and following granules are FDD-supplied attitude (ShortName AM1ATTF), the preceding granule is the output Toolkit format attitude product produced by the preceding run of Step 2 (ShortName AM1ATTNF).

#### Step 2 DPREP Specifications

-----

Tar File Name : \$ECS\_HOME/<MODE>/CUSTOM/data/DPS/FDDAttitude.tar  
 Contents : EcDpPrAm1FddAttitudeDPREP\_PGE  
                   PGS\_101  
 PGE Met File : \$ECS\_HOME/<MODE>/CUSTOM/data/DPS/FDDAttitude.tar.met

Top Level Exe : EcDpPrAm1FddAttitudeDPREP\_PGE

PGE Name : FddAtt  
Version Number : 20201

Profile 1 ODL : PGE\_FddAtt#2020101.odl  
Profile 2 ODL : PGE\_FddAtt#2020102.odl  
Profile 3 ODL : PGE\_FddAtt#2020103.odl  
Profile 4 ODL : PGE\_FddAtt#2020104.odl

### Test Scenario

The Step 2 DPREP test, like the Step 1 test scenario, is divided into two parts. The first part exercises Profiles 1, 2, and 3 over four consecutive data segments. The first data segment is scheduled for Profile 2 processing, the next two segments are scheduled for Profile 1 processing, and the last scheduled for Profile 3 processing. The data segments to be processed follow.

Segment 1: 1997 July 31 04:00:00 to 1997 July 31 06:00:00 (Profile 2)  
Segment 2: 1997 July 31 06:00:00 to 1997 July 31 08:00:00 (Profile 1)  
Segment 3: 1997 July 31 08:00:00 to 1997 July 31 10:00:00 (Profile 1)  
Segment 4: 1997 July 31 10:00:00 to 1997 July 31 12:00:00 (Profile 3)

The second Step 2 DPREP test exercises Profile 4 on an isolated data segment.

Segment 5: 1997 July 31 18:00:00 to 1997 July 31 20:00:00 (Profile 4)

There is one granule for each of the data segments described above. Insert all five granules into the archive using the SSIT Manager's insert dynamic data tool.

Segment 1:

ESDT Short Name : AM1ATTF  
File Names : AM1\_DEFINITIVE\_ATT.fdd.Profile\_2  
Met file : AM1\_DEFINITIVE\_ATT.fdd.Profile\_2.met  
Time Range : 1997 July 31 04:00:00 to 1997 July 31 06:00:00

Segment 2:

ESDT Short Name : AM1ATTF  
File Names : AM1\_DEFINITIVE\_ATT.fdd.Profile\_1.A  
Met file : AM1\_DEFINITIVE\_ATT.fdd.Profile\_1.A.met

Time Range : 1997 July 31 06:00:00 to 1997 July 31 08:00:00

Segment 3:

ESDT Short Name : AM1ATTF  
File Names : AM1\_DEFINITIVE\_ATT.fdd.Profile\_1.B  
Met file : AM1\_DEFINITIVE\_ATT.fdd.Profile\_1.B.met  
Time Range : 1997 July 31 08:00:00 to 1997 July 31 10:00:00

Segment 4:

ESDT Short Name : AM1ATTF  
File Names : AM1\_DEFINITIVE\_ATT.fdd.Profile\_3  
Met file : AM1\_DEFINITIVE\_ATT.fdd.Profile\_3.met  
Time Range : 1997 July 31 10:00:00 to 1997 July 31 12:00:00

Segment 5:

ESDT Short Name : AM1ATTF  
File Names : AM1\_DEFINITIVE\_ATT.fdd.Profile\_4  
Met file : AM1\_DEFINITIVE\_ATT.fdd.Profile\_4.met  
Time Range : 1997 July 31 18:00:00 to 1997 July 31 20:00:00

Create three production requests for the following time ranges. The number of DPRs that should be created are given below.

<b>Request</b>	<b>Timespan</b>	<b>Profile</b>	<b>DPRs</b>
1	1997 July 31 04:00:00 to 06:00:00	2	1
2	1997 July 31 06:00:00 to 10:00:00	1	2
3	1997 July 31 10:00:00 to 12:00:00	3	1

Schedule all three production requests to run as a single production plan. This completes the first part of the Step 2 DPREP test.

Next, create one production request that for the time range that follow.

<b>Request</b>	<b>Timespan</b>	<b>Profile</b>	<b>DPRs</b>
1	1997 July 31 18:00:00 to 20:00:00	4	1

Schedule this a separate production plan. This completes the second part of the Step 2 DPREP test.

These plans can be scheduled and run completely independently of the Step 1 DPREP plans described earlier.

## Results

Find output granules for each of the timespans described above for ESDTs AM1ATTNF and AM1ATTHF. ESDT AM1ATTNF is the Toolkit format attitude granule, while ESDT AM1ATTHF is the HDF format attitude granule.

## Step 3 DPREP Test Instructions

---

For Step 3, the current granule is FDD-supplied ephemeris (ShortName AM1EPHF), the preceding granule is the output Toolkit format ephemeris product produced by preceding run of Step 1, and the following granule is EDOS-supplied L0 Ancillary (ShortName AM1ANC).

### Step 3 DPREP Specifications

Tar File Name : \$ECS\_HOME/<MODE>/CUSTOM/data/DPS/ReplaceEphemeris.tar

Contents : EcDpPrAm1FddAttitudeDPREP\_PGE  
PGS\_101

PGE Met File : \$ECS\_HOME/<MODE>/CUSTOM/data/DPS/ReplaceEphemeris.tar.met

Top Level Exe : EcDpPrAm1FddEphemerisDPREP\_PGE

PGE Name : RepEph

Version Number : 20201

Profile 1 ODL : PGE\_RepEph#2020101.odl

Profile 2 ODL : PGE\_RepEph#2020102.odl

Profile 3 ODL : PGE\_RepEph#2020103.odl

Profile 4 ODL : PGE\_RepEph#2020104.odl

### Test Scenario

-----

Operationally, Step 3 AM-1 DPREP will most likely be scheduled to run on single data segments. Hence, the Step 3 test scenario consists of scheduling and running four plans that exercise the four Profiles individually on a single data segments. The data segments to be processed follow.

Segment 1: 1997 July 31 04:00:00 to 1997 July 31 06:00:00 (Profile 2)

Segment 2: 1997 July 31 08:00:00 to 1997 July 31 10:00:00 (Profile 1)

Segment 3: 1997 July 31 10:00:00 to 1997 July 31 12:00:00 (Profile 3)

Segment 4: 1997 July 31 18:00:00 to 1997 July 31 20:00:00 (Profile 4)

There is one granule for each of the data segments described above. Insert all four granules into the archive using the SSIT Manager's insert dynamic data

tool.

Segment 1:

ESDT Short Name : AM1EPHF  
File Names : AM1\_REPAIR\_EPH.fdd.Profile\_2  
Met file : AM1\_REPAIR\_EPH.fdd.Profile\_2.met  
Time Range : 1997 July 31 04:00:00 to 1997 July 31 06:00:00

Segment 2:

ESDT Short Name : AM1EPHF  
File Names : AM1\_REPAIR\_EPH.fdd.Profile\_1  
Met file : AM1\_REPAIR\_EPH.fdd.Profile\_1.met  
Time Range : 1997 July 31 08:00:00 to 1997 July 31 10:00:00

Segment 3:

ESDT Short Name : AM1EPHF  
File Names : AM1\_REPAIR\_EPH.fdd.Profile\_3  
Met file : AM1\_REPAIR\_EPH.fdd.Profile\_3.met  
Time Range : 1997 July 31 10:00:00 to 1997 July 31 12:00:00

Segment 4:

ESDT Short Name : AM1EPHF  
File Names : AM1\_REPAIR\_EPH.fdd.Profile\_4  
Met file : AM1\_REPAIR\_EPH.fdd.Profile\_4.met  
Time Range : 1997 July 31 18:00:00 to 1997 July 31 20:00:00

Create four individual production plans consisting of a single DPR for each of the time ranges that follow. Schedule and allow a given plan to complete before scheduling the next.

<b>Request</b>	<b>Timespan</b>	<b>Profile</b>	<b>DPRs</b>
1	1997 July 31 04:00:00 to 06:00:00	2	1
2	1997 July 31 06:00:00 to 10:00:00	1	1
3	1997 July 31 10:00:00 to 12:00:00	3	1
4	1997 July 31 18:00:00 to 20:00:00	4	1

These plans can be scheduled and run only after the Step 1 AM-1 DPREP test has been successfully completed. The Step 1 DPREP test scenario must be completed before CONTINUING with the Step 3 test scenario. Continuation of the Step 3 test scenario requires the archive environment that was produced from the successful completion of the Step 1 DPREP test scenario.

## Results

Find output granules for each of the timespans described above for ESDTs AM1EPHN0 and AM1EPHH0. ESDT AM1EPHN0 is the Toolkit format ephemeris granule, while ESDT AM1EPHH0 is the HDF format ephemeris granule. Output from Step 3 processing is placed in the same ESDTs as the Step 1 products.

### 26.18.5 Results of DPREP processing from earlier work

#### 26.18.5.1 Step1 DPREP directions taken from earlier work:

There are 2 profiles for DPREP. Profile 1 takes in previous DPREP output and is expected to be run most of the time at the DAACs. Profile 2 takes in only the AM1 Ancillary data and will be run only for the first run of DPREP (because there is no previous output). Both profiles should be registered and executed.

PGENAME : AM1Eph

PGEVERSION : 2.0

PROFILE : 1

TopLevelShellName : EcDpPrAm1EdosEphAttDPREP\_PGE

PGENAME : AM1Eph

PGEVERSION : 2.0

PROFILE : 2

TopLevelShellName : EcDpPrAm1EdosEphAttDPREP\_PGE (same executable, only insert it once)

PGE Tar file location :

\$ECS\_HOME/<MODE>/CUSTOM/data/DPS/AM1\_Ancillary\_DPREP.tar

PGE Met file location :

\$ECS\_HOME/<MODE>/CUSTOM/data/DPS/AM1\_Ancillary\_DPREP.tar.met

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The PGE tar file contains the executables: EcDpPrAm1EdosEphAttDPREP\_PGE, EcDpPrAm1EdosAncillary, EcDpPrAm1EdosEphemerisRepair, EcDpPrAm1ToolkitHdf.and the toolkit message file PGS\_101

This PGE has no static data. This means Insert Static from SSIT can be skipped for this PGE.

However, there are 4 dynamic granules (2 files each) that this PGE needs as input. These 4 granules can be inserted from SSIT **Insert Test Dynamic Tool**

Granule 1:

ESDT Short Name : AM1ANC

Version : 001

Multi File granule : Y

Directory : \$ECS\_HOME/<MODE>/CUSTOM/data/DPS

File Names : EDOS\_LEVEL\_ZERO\_00.curr, EDOS\_LEVEL\_ZERO\_01.curr

Met file : AM1ANC.curr.met

Granule 2:

ESDT Short Name : AM1ANC

Version : 001  
Multi File granule : Y  
Directory : \$ECS\_HOME/<MODE>/CUSTOM/data/DPS  
File Names : EDOS\_LEVEL\_ZERO\_00.next, EDOS\_LEVEL\_ZERO\_01.next  
Met file : AM1ANC.next.met

Granule 3:

ESDT Short Name : AM1ANC  
Version : 001  
Multi File granule : Y  
Directory : \$ECS\_HOME/<MODE>/CUSTOM/data/DPS  
File Names : EDOS\_LEVEL\_ZERO\_00.next\_1, EDOS\_LEVEL\_ZERO\_01.next\_1  
Met file : AM1ANC.next\_1.met

Granule 4:

ESDT Short Name : AM1ANC  
Version : 001  
Multi File granule : Y  
Directory : \$ECS\_HOME/<MODE>/CUSTOM/data/DPS  
File Names : EDOS\_LEVEL\_ZERO\_00.next\_2, EDOS\_LEVEL\_ZERO\_01.next\_2  
Met file : AM1ANC.next\_2.met

3 PRs need to be created, two for Profile 1 and one for Profile 2. Create the PR for Profile 2 first (it runs on earlier data) and then create the PR for Profile 1.

The time frame for Production request editor for Profile 2 is 1998 June 30 00:00:00 to 1998 June 30 02:00:00

The time frame for Production request editor for Profile 1 is 1998 June 30 02:00:00 to 1998 June 30 04:00:00

The time frame for Production request editor for the second Profile 1 is 1998 June 30 04:00:00 to 1998 June 30 06:00:00

**26.18.5.2 Step2 DPREP directions:**

\*\*\*\*\*

Step 2 DPREP can run ONLY after all three PRs for Step 1 DPREP have completed

\*\*\*\*\*

There are 2 profiles for Step 2 DPREP. Profile 1 takes in previous Step 2 DPREP output and is expected to be run most of the time at the DAACs. Profile 2 takes in only the Fdd Att data and will be run only for the first run of DPREP (because there is no previous output). Both profiles should be registered and executed.

PGENAME : FddAtt  
PGEVERSION : 1.0  
PROFILE : 1  
TopLevelShellName : EcDpPrAm1FddAttitudeDPREP\_PGE

PGENAME : FddAtt  
PGEVERSION : 1.0  
PROFILE : 2  
TopLevelShellName : EcDpPrAm1FddAttitudeDPREP\_PGE (same executable, only insert it once)

PGE Tar file location : \$ECS\_HOME/<MODE>/CUSTOM/data/DPS/FDDAttitude.tar  
PGE Met file location : \$ECS\_HOME/<MODE>/CUSTOM/data/DPS/FDDAttitude.tar.met  
Science Software Version: 1.0

The PGE tar file contains the executable EcDpPrAm1FddAttitudeDPREP\_PGE and the toolkit message file PGS\_101

This PGE has no static data. This means Insert Static from SSIT can be skipped for this PGE. However, there are 3 dynamic granules that this PGE needs as input. These 3 granules can be inserted from SSIT insert test dynamic tool

Granule 1:

ESDT Short Name : AM1ATTF  
Version : 001  
Multi File granule : N  
File Name :  
\$ECS\_HOME/<MODE>/CUSTOM/data/DPS/AM1\_DEFINITIVE\_ATT.fdd.curr  
Met file :  
\$ECS\_HOME/<MODE>/CUSTOM/data/DPS/AM1\_DEFINITIVE\_ATT.fdd.curr.met

Granule 2:

ESDT Short Name : AM1ATTF  
Version : 001  
Multi File granule : N  
File Name :  
\$ECS\_HOME/<MODE>/CUSTOM/data/DPS/AM1\_DEFINITIVE\_ATT.fdd.next  
Met file :  
\$ECS\_HOME/<MODE>/CUSTOM/data/DPS/AM1\_DEFINITIVE\_ATT.fdd.next.met

Granule 3:

ESDT Short Name : AM1ATTF  
Version : 001  
Multi File granule : N  
File Name :  
\$ECS\_HOME/<MODE>/CUSTOM/data/DPS/AM1\_DEFINITIVE\_ATT.fdd.next\_1  
Met file :  
\$ECS\_HOME/<MODE>/CUSTOM/data/DPS/AM1\_DEFINITIVE\_ATT.fdd.next\_1.met

2 PRs need to be created, one for Profile 1 and one for Profile 2. Create the PR for Profile 2 first (it runs on earlier data) and then create the PR for Profile 1.

The time frame for Production request editor for Profile 2 is 1998 June 30 02:00:00 to 1998 June 30 04:00:00

The time frame for Production request editor for Profile 1 is 1998 June 30 04:00:00 to 1998 June 30 06:00:00

Note: The Data files and tar files are delivered only to the Science Data Server and cannot be directly accessed by SSIT. In order to insert these files they must be moved to the SSIT server manually.

### 26.18.5.3 DPREP Step1 profile1 PCF

#### PRODUCT INPUT FILES

#####

#### (Initial Construction Record:)

1000|P0420004AAAAAAAAAAAAAAAAA98300080000000.PDS|/net/p0drg01/dss\_amass/testdata/instrument\_data/AM1/EDOS\_HK Anc/EDOSL0 Anc\_PDS\_0002||<A) insert UR here>||2

#### (Current 2 hour Data File)

1000|P0420004AAAAAAAAAAAAAAAAA98300080000001.PDS|/net/p0drg01/dss\_amass/testdata/instrument\_data/AM1/EDOS\_HK Anc/EDOSL0 Anc\_PDS\_0002||<B) insert UR here>||1

:

#### (Future 2 hour Construction Record)

1010|P0420004AAAAAAAAAAAAAAAAA98300100000000.PDS|/net/p0drg01/dss\_amass/testdata/instrument\_data/AM1/EDOS\_HK Anc/EDOSL0 Anc\_PDS\_0002||<C) insert UR here>||2

#### (Future 2 hour Data File)

1010|P0420004AAAAAAAAAAAAAAAAA98300100000001.PDS|/net/p0drg01/dss\_amass/testdata/instrument\_data/AM1/EDOS\_HK Anc/EDOSL0 Anc\_PDS\_0002||<D) insert UR here>||1

# -----

# The last ephemeris/attitude data sets generated. (Found in PGE template)

# -----

# Ephemeris (Toolkit native format) (Previous Time Range)

1500|EOS\_AM1\_Ephemeris.21206.step1b.eph|/home/cmts1/DPREP/demooutput||<E) insert UR here>||1

# Attitude (Toolkit native format)

1502|EOS\_AM1\_Attitude.21206.step1.att|/home/cmts1/DPREP/demooutput||<F) insert UR here>||1

:

#### ? PRODUCT OUTPUT FILES

#####

#### (Current Time Range)

# -----

# Toolkit attitude datasets (output of EcDpPrAm1EdosAncillary).

# -----

```

1001|EOS_AM1_Attitude.21208.step1.att/home/cmts1/DPREP/demooutput|||1
1100|EOS_AM1_Attitude.21208.step1.hdf/home/cmts1/DPREP/demooutput|||1
# -----
# Toolkit ephemeris datasets (output of EcDpPrAm1EdosAncillary).
# -----
1102|EOS_AM1_Ephemeris.21208.hdf/home/cmts1/DPREP/demooutput|||1
# -----
# Gap-filled HDF ephemeris dataset (output of EcDpPrAm1EphemerisGapFill).
# -----
1151|EOS_AM1_Ephemeris.21208.step1b.eph/home/cmts1/DPREP/demooutput|||1
# -----
# Gap-filled Toolkit ephemeris dataset (output of
# EcDpPrAm1FormatNativeEphemeris).
# -----
1152|EOS_AM1_Ephemeris.21208.step1b.hdf/home/cmts1/DPREP/demooutput|||1
:
SUPPORT OUTPUT FILES
#####
10100|LogStatus/home/cmts1/DPREP/logs|||1
10101|LogReport/home/cmts1/DPREP/logs|||1
10102|LogUser/home/cmts1/DPREP/logs|||1
10103|TmpStatus|||1
10104|TmpReport|||1
10105|TmpUser|||1
10110|MailFile|||1
:
? USER DEFINED RUNTIME PARAMETERS
#####
999|No Previous Data Set; 1=true, 0=false.|0      (Profile 1 set to 0, Profile 2 set to 1)
# -----
# Toolkit version for which this PCF was intended.
# DO NOT REMOVE THIS VERSION ENTRY!
# -----
10220|Toolkit version string|DAAC B.0 TK5.2.4   (Caution: May need to change to higher
level Toolkit)
END

```

#### 26.18.5.4 DPREP Step1 profile2 PCF (Profile 2 is start up PCF)

##### PRODUCT INPUT FILES

```

#####
1000|P0420004AAAAAAAAAAAAAAAAA98300060000000.PDS/net/p0drg01/dss_amass/testdata/
instrument_data/AM1/EDOS_HK_ANC/EDOSL0_ANC_PDS_0002||<A) insert UR here>||2
1000|P0420004AAAAAAAAAAAAAAAAA98300060000001.PDS/net/p0drg01/dss_amass/testdata/
instrument_data/AM1/EDOS_HK_ANC/EDOSL0_ANC_PDS_0002||<B) insert UR here>||1

```

```

1010|P0420004AAAAAAAAAAAAAAAAA98300080000000.PDS|/net/p0drg01/dss_amass/testdata/
instrument_data/AM1/EDOS_HK_ANC/EDOSL0_ANC_PDS_0002||<C) insert UR here>||2
1010|P0420004AAAAAAAAAAAAAAAAA98300080000001.PDS|/net/p0drg01/dss_amass/testdata/
instrument_data/AM1/EDOS_HK_ANC/EDOSL0_ANC_PDS_0002||<D) insert UR here>||1
# -----
# The last ephemeris/attitude data sets generated.
# -----
# Ephemeris (Toolkit native format)
#1500|EOS_AM1_Ephemeris.prev.eph.||<E) insert UR here>||1
# Attitude (Toolkit native format)
#1502|EOS_AM1_Attitude.21206.step1.att|/home/cmts1/DPREP/output||<F) insert UR here>||1
:
? PRODUCT OUTPUT FILES
#####
# -----
# Toolkit attitude datasets (output of EcDpPrAm1EdosAncillary).
# -----
1001|EOS_AM1_Attitude.21206.step1.att|/home/cmts1/DPREP/demooutput|||1
1100|EOS_AM1_Attitude.21206.step1.hdf|/home/cmts1/DPREP/demooutput|||1
# -----
# Toolkit ephemeris datasets (output of EcDpPrAm1EdosAncillary).
# -----
1102|EOS_AM1_Ephemeris.21206.hdf|/home/cmts1/DPREP/demooutput|||1
# -----
# Gap-filled HDF ephemeris dataset (output of EcDpPrAm1EphemerisGapFill).
# -----
1151|EOS_AM1_Ephemeris.21206.step1b.eph|/home/cmts1/DPREP/demooutput|||1
# -----
# Gap-filled Toolkit ephemeris dataset (output of EcDpPrAm1FormatNativeEphemeris).
# -----
1152|EOS_AM1_Ephemeris.21206.step1b.hdf|/home/cmts1/DPREP/demooutput|||1
? SUPPORT OUTPUT FILES
#####
10100|LogStatus|/home/cmts1/DPREP/logs|||1
10101|LogReport|/home/cmts1/DPREP/logs|||1
10102|LogUser|/home/cmts1/DPREP/logs|||1
10103|TmpStatus|||1
10104|TmpReport|||1
10105|TmpUser|||1
10110|MailFile|||1
:
? USER DEFINED RUNTIME PARAMETERS
#####
999|No Previous Data Set; 1=true, 0=false.|1
# -----

```

# Toolkit version for which this PCF was intended.  
# DO NOT REMOVE THIS VERSION ENTRY!

# -----

10220|Toolkit version string|DAAC B.0 TK5.2.4

? END

### 26.18.5.5 DPREP Step2 profile1 PCF

#### PRODUCT INPUT FILES

```
#####
1000|AM1_DEFATT_080000_212_1997_01.FDD|/home/cmts1/DPREP/am1defatt|<A) insert
UR here>||1
:
1010|AM1_DEFATT_100000_212_1997_01.FDD|/home/cmts1/DPREP/am1defatt|<B) insert
UR here>||1
# -----
# The last ephemeris/attitude data sets generated.
# -----
# Attitude (Toolkit native format)
1502|EOS_AM1_Attitude.21206.step2.att|/home/cmts1/DPREP/demooutput|<C) insert UR
here>||1
:
#1400|AM1EPHMH.mcf|.||||1
1401|AM1ATTHF.MCF|/home/cmts1/DPREP/mcf||||1
#1402|AM1EPHMN.mcf|.||||1
1403|AM1ATTNF.MCF|/home/cmts1/DPREP/mcf||||1
10250|MCF||||1
10252|GetAttr.temp||||1
10254|MCFWrite.temp||||1
:
10501|EOS_AM1_Ephemeris.21208.step1b.eph|/home/cmts1/DPREP/demooutput||||2
10501|EOS_AM1_Ephemeris.21210.step1b.eph|/home/cmts1/DPREP/demooutput||||1
10502|INSERT_ATTITUDE_FILES_HERE||||1
:
? PRODUCT OUTPUT FILES
#####
:1001|EOS_AM1_Attitude.21208.step2.att|/home/cmts1/DPREP/demooutput||||1
1100|EOS_AM1_Attitude.21208.step2.hdf|/home/cmts1/DPREP/demooutput||||1
:
? USER DEFINED RUNTIME PARAMETERS
#####
:
999|First Mission Data Set; 1=true, 0=false.|0
:10220|Toolkit version string|DAAC B.0 TK5.2.4
:END
```

### 26.18.5.6 DREP Step2 profile2 PCF

#### PRODUCT INPUT FILES

```
#####
1000|AM1_DEFATT_060000_212_1997_01.FDD|/home/cmts1/DPREP/am1defatt|<A) insert
UR here>||1
```

```

:
1010|AM1_DEFATT_080000_212_1997_01.FDD|/home/cmts1/DPREP/am1defatt||<B) insert
UR here>||1
# -----
# The last ephemeris/attitude data sets generated.
# -----
# Attitude (Toolkit native format)
1502|EOS_AM1_Attitude.21206.step1.att|/home/cmts1/DPREP/demooutput||<C) insert UR
here>||1
:
1400|AM1EPHMH.mcf|.||||1
1401|AM1ATTHF.MCF|/home/cmts1/DPREP/mcf||||1
1402|AM1EPHMN.mcf|.||||1
1403|AM1ATTNF.MCF|/home/cmts1/DPREP/mcf||||1
10250|MCF||||1
10252|GetAttr.temp||||1
10254|MCFWrite.temp||||1
:
10501|EOS_AM1_Ephemeris.21206.step1b.eph|/home/cmts1/DPREP/demooutput||||2
10501|EOS_AM1_Ephemeris.21208.step1b.eph|/home/cmts1/DPREP/demooutput||||1
10502|INSERT_ATTITUDE_FILES_HERE||||1
:
? PRODUCT OUTPUT FILES
#####
1001|EOS_AM1_Attitude.21206.step2.att|/home/cmts1/DPREP/demooutput||||1
1100|EOS_AM1_Attitude.21206.step2.hdf|/home/cmts1/DPREP/demooutput||||1
:
? USER DEFINED RUNTIME PARAMETERS
#####
:999|First Mission Data Set; 1=true, 0=false.|1
:
10220|Toolkit version string|DAAC B.0 TK5.2.4
:
? END

```

### 26.18.5.7 Setups for DPREP

```

set path = ( /usr/ecs/TS1/CUSTOM/TOOLKIT/toolkit/bin/sgi_daac_f90 $path )
setenv PGS_PC_INFO_FILE /home/cmts1/DPREP/pcf/Step1DP21206.PCF
setenv PGSMMSG /home/cmts1/DPREP/msg
setenv PGSHOME /usr/ecs/TS1/CUSTOM/toolkit
setenv PGS_PC_INFO_FILE /home/cmts1/DPREP/pcf/Step1DP21208.PCF
setenv PGSMMSG /home/cmts1/DPREP/msg
setenv PGSHOME /usr/ecs/TS1/CUSTOM/toolkit
setenv PGS_PC_INFO_FILE /home/cmts1/DPREP/pcf/Step1DP21210.PCF
setenv PGSMMSG /home/cmts1/DPREP/msg

```

```

setenv PGSHOME /usr/ecs/TS1/CUSTOM/toolkit
setenv PGS_PC_INFO_FILE /home/cmts1/DPREP/pcf/Step2DP21206.PCF
setenv PGSMSG /home/cmts1/DPREP/msg
setenv PGSHOME /usr/ecs/TS1/CUSTOM/toolkit
setenv PGS_PC_INFO_FILE /home/cmts1/DPREP/pcf/Step2DP21208.PCF
* setenv PGSMSG /home/cmts1/DPREP/msg
* setenv PGSHOME /usr/ecs/TS1/CUSTOM/toolkit

```

Note: The **setenv** parameters are used for the **Command Line PGE** test. Only the (\*) are used for **PDPS PGE** runs.

### 26.18.6 FDD Ephemeris Reprocessing Due To QA Failure

The following events occur when FDD-supplied ephemeris fails QA checking:

- 11 A subscription is placed on ESDT AM1EPHNF for replacement data (ESDT AM1EPHF) when *QaPercentMissingData* or *QaOutOfBoundsData* is greater than or equal to 1.
- 12 The AM1 DPREP FDD ephemeris processor (“RepEph” or “Step 3” DPREP PGE) detects a data gap or an out-of-bounds data point in the FDD-supplied ephemeris timeline (supplied through ESDT ShortName AM1EPHF). Assuming that no fatal errors are otherwise encountered, the PGE exits with status code 216, a success condition that indicates that the FDD-supplied ephemeris data set must be replaced by a re-delivery of the *same* data set. The *QaPercentMissingData* or *QaOutOfBoundsData* metadata has been set to a value greater than or equal to 1.
- 13 A subscription triggers when the DPREP output data set (i.e. AM1EPHNF) that is generated in step 2 is inserted into the archive. The subscription triggers because of *QaPercentMissingData* or *QaOutOfBoundsData* being greater than or equal to 1.
- 14 The GDAAC operator receives an E-mail notification indicating that the subscription has triggered. The universal reference (UR) of the AM1EPHNF granule that triggered the subscription is provided in the E-mail.
- 15 The GDAAC operator uses the database ID imbedded within the UR to identify the AM1EPHNF granule in the archive using *EcCoDbViewer*. Retrieve the start and end times of this granule.
- 16 The GDAAC operator telephones the FOT (telephone number 301-614-5431) and requests an FDD ephemeris data set (ESDT ShortName AM1EPHF) be sent for the time period spanned by the start and end times determined in step 5. The operator explicitly states what the replacement granule’s start and end time must be, to the second. The replacement ephemeris data set will be sent to both the GDAAC and the LDAAC.
- 17 The GDAAC operator notifies LDAAC operations (telephone number 757-864-9197) that a new AM1EPHF ephemeris data set is going to arrive for the time period determined in step 5.
- 18 The GDAAC and LDAAC operators schedule the AM-1 DPREP FDD ephemeris processor (“RepEph” or “Step 3” DPREP PGE) to process the time interval determined in step 5. If data replacement occurs on the first granule following a period of data

dropout, Profile 2 processing must be scheduled. Otherwise, Profile 1 can be scheduled to run.

### 26.18.6.1 Boot-up of EDOS Ephemeris Processing

AM-1 DPREP EDOS ephemeris processor (“AM1Eph” or “Step 1” DPREP) Profile 2 requires a special procedure in order to achieve boot-up processing at the start of the mission and following periods of data dropout. The required steps follow:

1. Wait for the first EDOS-supplied AM1ANC data set that follows the interval of data dropout to be ingested.
2. Use the *EcCoDbViewer* archive browser to determine the start and end time of the granule.
3. Call the FOT (telephone number 301-614-5431) and ask to speak with the on-line engineer.
4. Ask the on-line engineer to provide the orbit number at the granule start time determined in step 2.
5. Telephone LDAAC operations (telephone number 757-864-9197). Pass-on the orbit number determined in step 4 to the operator so the LDAAC can proceed with steps 6 through 9. This avoids having both the LDAAC and the GDAAC perform steps 1 through 4.
6. In directory /usr/ecs/OPS/CUSTOM/data/DPS, locate ODL file PGE\_AM1EphVVVVV02.odl. VVVVV is the version number of the operational AM-1 DPREP.
7. Edit this file using vi. Locate logical ID 998 (*PGE\_PARAMETER\_NAME InitialOrbitNumber*) within the ODL file and insert the orbit number provided by the FOT on-line engineer into the line beginning with *PGE\_PARAMETER\_DEFAULT*. This step requires *allmode* privileges in order to edit the ODL file.
8. Register the “AM1Eph” AM-1 DPREP.
9. Schedule “AM1Eph” AM-1 DPREP, Profile 2 to process the interval given by the start and end times determined in step 2.

### 26.18.6.2 FDD Replacement Ephemeris Processing

The following events occur in FDD replacement ephemeris processing:

1. A subscription is placed on ESDT AM1EPHN0 for replacement data (ESDT AM1EPHF) when *QaPercentMissingData* is greater than or equal to 1.
2. The AM1 DPREP EDOS ephemeris processor (“AM1Eph” or “Step 1” DPREP PGE) detects a long data gap in the EDOS-supplied ephemeris timeline (supplied through ESDT ShortName AM1ANC). Assuming that no fatal errors are otherwise encountered, the PGE exits with status code 216, a success condition that indicates the replace ephemeris condition has been detected. The *QaPercentMissingData* metadata is set to a value greater than or equal to 1, depending on the size of the data gap that is detected.
3. A subscription triggers when the DPREP output data set (i.e. AM1EPHN0) that is generated in step 2 is inserted into the archive. The subscription triggers because of *QaPercentMissingData* being greater than or equal to 1.

4. The GDAAC operator receives an E-mail notification indicating that the FDD replacement ephemeris data set subscription has triggered. The universal reference (UR) of the AM1EPHN0 granule that triggered the subscription is provided in the E-mail.
5. The GDAAC operator uses the database ID imbedded within the UR to identify the AM1EPHN0 granule in the archive using *EcCoDbViewer*. Retrieve the start and end times of this granule.
6. Given the start and end granules times, the GDAAC operator derives the replacement time range. The procedure will be demonstrated by example. If the 2-hour AM1EPHN0 granule ideally spans 22h – 24h of day 2000-06-07, the replacement ephemeris granule time span is
  - Start time = 2000-06-07 22:00:00.000
  - End time = 2000-06-07 23:59:59.000

Replacement data starts on the hour and ends one second prior to the start of the subsequent 2-hour granule.

7. The GDAAC operator telephones the FOT (telephone number 301-614-5431) and requests an FDD replacement data set (ESDT ShortName AM1EPHF) be sent for the time period spanned by the start and end times determined in step 6. The operator explicitly states what the replacement granule's start and end time must be, to the second. The replacement ephemeris data set will be sent to both the GDAAC and the LDAAC.
8. The GDAAC operator notifies LDAAC operations (telephone number 757-864-9197) that a replacement ephemeris data set (AM1EPHF) is going to arrive for the time period determined in step 6.
9. The GDAAC and LDAAC operators schedule the AM-1 DPREP replacement ephemeris processor ("RepEph" or "Step 3" DPREP PGE) to process the time interval determined in step 6. If data replacement occurs on the first granule following a period of data dropout, Profile 2 processing must be scheduled. Otherwise, Profile 1 can be scheduled to run.

### 26.18.6.3 FDD Attitude Reprocessing Due To QA Failure

The following events occur when FDD-supplied attitude fails QA checking:

- a. A subscription is placed on ESDT AM1ATTNF for replacement data (ESDT AM1ATTF) when *QaPercentMissingData* or *QaOutOfBoundsData* is greater than or equal to 1.
- b. The AM1 DPREP FDD attitude processor ("FddAtt" or "Step 2" DPREP PGE) detects a data gap or an out-of-bounds data point in the FDD-supplied attitude timeline (supplied through ESDT ShortName AM1ATTF). Assuming that no fatal errors are otherwise encountered, the PGE exits with status code 216, a success condition that indicates that the FDD-supplied attitude data set must be replaced by a re-delivery of the *same* data set. The *QaPercentMissingData* or *QaOutOfBoundsData* metadata has been set to a value greater than or equal to 1.
- c. A subscription triggers when the DPREP output data set (i.e. AM1ATTNF) that is generated in step 2 is inserted into the archive. The subscription triggers because of *QaPercentMissingData* or *QaOutOfBoundsData* being greater than or equal to 1.
- d. The GDAAC operator receives an E-mail notification indicating that the subscription has triggered. The universal reference (UR) of the AM1ATTNF granule that triggered the subscription is provided in the E-mail.

- e. The GDAAC operator uses the database ID imbedded within the UR to identify the AM1ATTNF granule in the archive using *EcCoDbViewer*. Retrieve the start and end times of this granule.
- f. The GDAAC operator telephones the FOT (telephone number 301-614-5431) and requests an FDD attitude data set (ESDT ShortName AM1ATTF) be sent for the time period spanned by the start and end times determined in step 5. The operator explicitly states what the replacement granule's start and end time must be, to the *millisecond*. The replacement attitude data set will be sent to both the GDAAC and the LDAAC.
- g. The GDAAC operator notifies LDAAC operations (telephone number 757-864-9197) that a new AM1ATTF attitude data set is going to arrive for the time period determined in step 5.
- h. The GDAAC and LDAAC operators schedule the AM-1 DPREP FDD attitude processor ("FddAtt" or "Step 2" DPREP PGE) to process the time interval determined in step 5. If data replacement occurs on the first granule following a period of data dropout, Profile 2 processing must be scheduled. Otherwise, Profile 1 can be scheduled to run.

## 26.19 PGE Chaining

### 26.19.1 Chaining PGE's

1. Create PRs (so that DPRs) for the PGEs to be chained.

This can be done by using PR Editor. Follow the same procedure as creating independent PR.

A few points need to be noticed. Let's say among the chained PGEs, the output of PGE A will be the input of PGE B.1) In ESDT odl for this shared granule, "DYNAMIC\_FLAG" has to be set to "I", i.e., dynamic internal. 2) First create PR for PGE A, then for PGE B. Otherwise PGE B PR may not be able to be generated.

2. Create the plan for a bunch of PRs which are chained.

In Work Bench GUI, 1) pull down "file" menu and select "new" to create the new plan; 2) highlight all PRs that are chain by clicking on their names on "unscheduled" area of Production Request area; 3) click schedule button to schedule these PRs.

3. Activate the plan.

In the Workbench GUI, click "activate" button, a GUI will pop up to ask for saving the plan. Answer "yes". Then another GUI will pop up to confirm whether to really activate the plan. Answer "yes" and the lowest level of DPR(s) in the chain will kick off.

In the pdps database, the PIDataProcessingRequest table is where the PRs are successfully generated, the "completionState" for all DPRs in the chain are "NULL". When the plan is successfully activated, the "CompletionState" for lowest level of DPR(s) is changed from "NULL" to "STARTED". The high level of DPR(s) in the chain is changed from "NULL" to "CQ\_HOLD". Eventually, the low level of DPR(s) finish so that the input for high level of DPR(s) become available, Then the high level DPR(s) kick off and the "CompletionState" then changes from "CQ\_HOLD" to "STARTED".

## 26.20 Updating the Orbit Model

### 26.20.1 Introduction to Updating the Orbit Model

To determine realtime the latest Orbit Start times, Orbit Period, Path Number and Orbit Number, PDPS takes in specific information about the orbit of the satellite during initial SSI&T. This information then becomes the basis for predictions of future orbit start times and numbers. Because this value is accurate within a fraction of a second of time, the satellite may “drift” or a correction to orbit, known as a “burn” may have been applied. Therefore, the satellite Orbit Start Time can get out of sync either +/- with reality. The consequences are an elapse in time that will affect the Production Request Editor’s ability to find a granule that should match with a DPR, or an incorrect Orbit Time could be passed to the PGE. The update of Orbit parameters will be done weekly at a specific time with scrips specifically written to extract the new Orbit Parameters from the most recent DPREP output file. These parameters intern will be inserted manually to the ORBIT.ODL file and then the re-registration of the Orbit.ODL file into the PDPS by SSI&T personnel. The M&O support Help Desk Team is responsible for knowing when changes to Orbit location have taken place from the Flight Dynamics Systems (FDS). A KnowledgeBase with backup procedures will be maintained by M&O for contingencies concerning Orbit Model updates. DPREP processing will be the most likely place to experience a failure due to Orbit time sync error encounters. The restoration of Orbit parameters with new values from FDS will most likely be necessary. The following procedures are provided to bring about an updated Orbit Model within ECS.

### 26.20.2 Procedures to Update the Orbit Model

Upon receipt of updated orbit parameters: ORBIT\_NUMBER,  
ORBIT\_PERIOD,  
ORBIT Path Number and  
ORBIT\_START Time.

Proceed with the following steps.

---

- 1 Telnet or Rlogin to location (ais) system where ODL files are stored. ie;  
“/usr/ecs/OPS/CUSTOM/data/DPS/ODL”
- 2 Select the ORBIT.odl that is currently being used.
- 3 Using **vi**, **update the following files with the new parameter values received:**
  - **ORBIT\_AM1.odl** and/or **ORBIT\_EOSAM1.odl** if they both are in use.
- 4 Have someone double check your entries for accuracy before preceeding to the SSIT Manager for registering the new ODL file in the PDPS system.
- 5 For **Test Data** only; determine the Instrument PGE ODL that will be updated. MISR, MODIS etc.
  - Using **vi**, **update the corresponding PATHMAP\_Instrument\_.odl** file with the new parameter values received.
  - Ensure that the ABSOLUTE\_PATH and MAPPED\_PATH parameters agree with those in the new ORBIT\_XXXX.odl.
- 6 SSI&T personnel will execute an Orbit Model Update by running a Dummy PGE established for this purpose at each of the DAAC’s. Note: A dummy PGE is ran since a normal PGE cannot be re-registered if any DPRs exist in the system.

- 7 Notify DAAC Operations Supervisor that the Orbit Model has been updated. He will make a log entry of such action taken and may request the old computed values and the new replacement values be provided. The Supervisor will ensure that the orbital change is within several seconds, the expected change and not minutes!
- 

## **26.21. Learn more about SSI & T**

### **26.21.1 References:**

**PDPS Home Page:** <http://dmserver.gsfc.nasa.gov/ecsdev/relb/pdps/index.html>

URL for ECS Project Training Material Volume 16: SSI&T December 1997:

<http://m0mss01.ecs.nasa.gov/smc/dc> master.html

**MISR Science Data Processing Software Test Plan, Volume 2, Detailed Procedures and Facilities Version 2.0, Part 1 (PGE 1) June 1998.**

<http://dmserver.gsfc.nasa.gov/relbit/relbit.html>

SV DOC

REPOSITORY

Home

Drop Build Plans

Acceptance Test Plan

System Verification Test Plan

Access Database

Release B Testdata

Site Install and Checkout Test

End To End Test Procedures

Goddard DAAC M&O Status

VATC Status Page

ECS TEST

PAGES

Advertising Service (VATC)

User Registration Tool

(VATC)

V0 Web Client (VATC TS2)

V0 Web Client (DAAC

MODE TS2)

V0 Web Client (DAAC

MODE TS1)

V0 Web Client (DAAC

MODE OPS)

ECS TOOLS

EP7

RTM

CCR

EDHS

DDTS

Network Status Page

ECS Newsroom Server

Configuration Management

Release B Integration

ECS Telephone & Email Dir

ISO 9001

Business Manual Tab

Job Description Tab

Organization Charts Tab

Process Directives Tab

Training Tab

Miscellaneous Tab

Frequently Asked questions

EDHS

Raytheon Company

**ESDT Basics** <http://dmserver.gsfc.nasa.gov/esdt/EsdtSection1/index.html>

---

**GDAAC Directory for SSI&T:**<http://gsfcsrvr8.gsfcmo.ecs.nasa.gov/SSIT/>

The ESDT Process (updated for drop 4) by Karl W. Cox, 22 December 1997

DCE Cell Manager Common User Tasks provided by IDG, February 6, 1998

1 Tools and Techniques for Diagnosing Potential DCE Problems

MODIS - Science Data Processing Software Release 4 System Description

SDST-104, May 19, 1998

ECSINFO: <http://ecsinfo.hitc.com/iteams/Science/science.html>

PDPS howto are located on the EDF machines at: **/home/PDPS/docs/**

PDPS Web Page: <http://dmserver.gsfc.nasa.gov/ecsdev/relb/pdps/index.html>

For Troubleshooting or use the following EDF machines:

PDPS Troubleshooting Techniques are located on the EDF machines at :  
**/home/PDPS/troubleshooting/**

DPREP README files located at **:/usr/ecs/TS1/CUSTOM/data/DPS/**

DPREP binary located: **:/usr/ecs/TS1/CUSTOM/bin/DPS/**

### **26.21.2 Server Node Names Convention:**

The naming convention is as follows:

Machine names are defined to be equivalent to the network hostname of the machine. Network hostnames are limited to eight characters. On ECS we are now formatting these hostnames as `svcimnni`

Whereas : Site

- g – GSFC
- e – EDC
- l – LaRC
- n – NSIDC
- a – ASF
- j – JPL
- p- PVC
- t – VATC

v : Version

- 0 -- Release 4 At-Launch COTS design
- 1 -- Stood for B.1 COTS design; OBE, but still used in VATC
- s -- Used for special SSI&T machines set up at GSFC and EDC

ci : Hardware Configuration Item

- sp -- Science Processing (SPRHW)
- ai -- Algorithm Integration and Test (AITHW)
- aq -- Algorithm Quality Assurance (AQAHW)
- pl -- Planning (PLNHW)
- ms -- Management Subsystem (MSSHW)
- cs -- Communications Subsystem (CSSHW)
- in -- Interface (INTHW)
- dm -- Data Management (DMGHW)
- dr -- Data Repository (DRPHW)
- ac -- Access Control Management (ACMHW)
- ic -- Ingest Client (ICLHW)
- wk -- Working Storage (WKSHW)

di -- Distribution (DIPHW)  
as -- ASTER (ASTHW) [Occurs only at EDC]  
te -- Test Equipment

m : Manufacturer

s -- Sun  
g -- SGI  
h -- HP  
x -- X Terminal  
p -- PC

nn : One-up number (01, 02, et cetera -- should be unique for the CI)

i : Interface type

<null> -- Production network  
u -- User network  
h -- HiPPI

Note that the machine name leaves off the last letter (the interface); hence, we generally refer to machines as "g0spg01", vice "g0spg01h". A machine may have multiple interfaces -- production, user, and HiPPI. So a single machine may show up in network documentation multiple times (g0spg01, g0spg01h, g0spg01u).

### 26.21.3 A Handy Alias file to use while conducting SSI&T:

p0spg01{emcleod}51: **alias**

+ pushd  
- popd

**More** more !\* |grep -v "Msg: Caught dce error: No more bindings (dce / rpc)"  
|grep -v "MsgLink :0 meaningfulname :EcAgManager::Recovery" |grep -v "MsgLink  
:0 meaningfulname :DsShSRequestRealSetStateSettingState" |grep -v "Command 1/1  
execution complete"

**cdstagebin** cd /ecs/formal/STAGE/DSS/bin/sun5.5

**dbg** debugger -bg NavajoWhite -fn 12x24 !\* &

**db** /home/jzhuang/bin/dbrowser-syb &

**disp** setenv DISPLAY !\*

**mgr** DpAtMgr ConfigFile /usr/ecs/TS1/CUSTOM/cfg/DpAtMG.CFG ecs\_mode TS1&

**ops** cd /usr/ecs/OPS/CUSTOM

**ts1** cd /usr/ecs/TS1/CUSTOM

**xslq\_autosys** isql -Uautosys -Pautosys -Sp0sps06\_srvr

**xsql\_css** isql -Ucss\_role -Pwelcome -Sp0ins01\_srvr

```
xsqldss    isql -UsdsvApp -Pwelcome -Sp0acg01_sqs222_svr
xsqlios    isql -Uios_role -Pwelcome -Sp0ins02_svr
xsqldpds   isql -UpdpsUsers -Pwelcome -Sodysey_svr
```

**# alias for browser**

**Note: On Performance Verification Center (PVC), dbbrowser has to originate from workstation ODYSSEY to execute alias db\_pdpds to reach PDPS DB on p0pls02.**

```
alias db_dss '/home/opscm/dbr/dbbrowser-syb -UsdsvApp -Pwelcome -Sp0acg01_sqs222_svr &'
```

```
alias db_ios '/home/opscm/dbr/dbbrowser-syb -Uios_role -Pwelcome -Sp0ins02_svr &'
```

```
alias db_css '/home/opscm/dbr/dbbrowser-syb -Ucss_role -Pwelcome -Sp0ins01_svr &'
```

```
alias db_autosys '/home/opscm/dbr/dbbrowser-syb -Uautosys -Pautosys -Sp0sps06_svr &'
```

```
alias db_pdpds '/home/opscm/dbr/dbbrowser-syb -UpdpsUsers -Pwelcome -Sp0pls02_svr &'
```

```
alias db_ing '/home/opscm/dbr/dbbrowser-syb -UEcInPolling -P3nWK0fG1 -Sp0icg01_svr &'
```

```
alias db_stmgt '/home/opscm/dbr/dbbrowser-syb -UEcDsStFtpDisServer -PS71Oq4y3 -Sp0icg01_svr &'
```

**ls -laF** look at root and .cshrc, .alias

## 26.21.4 HOWTO\_SIT HELPFUL NOTES

### Xterm format to bring up xterm windows for servers all at once

This list of xterm identifiers should be assigned a file name and placed into your home directory. Then invoke the file name when you want to create the entire list of xterms.

#### Example of filename: - xterm\_pls

```
xterm -sb -sl 10000 -fg green -bg black -name "Resource Editor" &
xterm -sb -sl 10000 -fg green -bg black -name "Resource Model" &
xterm -sb -sl 10000 -fg green -bg black -name "Production Request Editor" &
xterm -sb -sl 10000 -fg green -bg black -name "Planning Workbench" &
xterm -sb -sl 10000 -fg green -bg black -name "Database" &
xterm -sb -sl 10000 -fg green -bg black -name "Planning Timeline" &
xterm -sb -sl 10000 -fg green -bg black -name "Logs" &
xterm -sb -sl 10000 -fg green -bg black -name "ECS Assist" &
xterm -sb -sl 10000 -fg green -bg black -name "g0sps06" &
xterm -sb -sl 10000 -fg green -bg black -name "g0ais01" &
xterm -sb -sl 10000 -fg green -bg black -name "g0spg01" &
xterm -sb -sl 10000 -fg green -bg black -name "g0drg01" &
xterm -sb -sl 10000 -fg green -bg black -name "g0pls02" &
# setenv ECS_HOME /usr/ecs
# setenv MODE TS2
```

## 26.21.5 howto\_setup\_orbits\_and\_pathmaps

ORBITS & PATHMAPS

The Path is a an orbit swath, defined for Landsat-7 ("WRS"), which MISR uses in its processing. Because the earth rotates under it, the path the satellite traverses for its next orbit is not path 2, but path 17. This mapping of orbit number to path number is found in the PATHMAP ODL file. In that file ABSOLUTE\_PATH is what we call orbit number here, and MAPPED\_PATH is the path number. Now, this mapping is fixed, and never changes. What does change is the time each orbit starts. This is because the orbit may drift and be subject to maneuvers.

Periodically (say, every 2 weeks), the Flight Dynamics Facility (FDF) at GSFC issues a new Orbit Start Time, with corresponding Orbit Number. When this happens, the PDPS ORBIT ODL must be updated, with a new ORBIT\_MODEL object, containing the new ORBIT\_START and corresponding ORBIT\_NUMBER. The new ORBIT\_PATH\_NUMBER is determined manually by the operator, using the lookup table in the PATHMAP ODL file.

#### 1. Example (MISR PGE7 test data)

FDF issues a bulletin stating that imaginary platform MPGE7 orbit number 27 starts at 14:37:39Z 07-Jan-96. SSIT operator receives the bulletin, looks up in the corresponding PATHMAP\_WRS7.odl file to find that ABSOLUTE\_PATH XX corresponds to MAPPED\_PATH XX.

#### NEED TO FIX THIS

The SSIT operator then creates a new ORBIT\_MODEL object in the ORBIT ODL file as follows:

```
OBJECT = ORBIT_MODEL
```

```
  CLASS = 2
```

```
  ORBIT_NUMBER = 27
```

```
  ORBIT_PERIOD = "SECS=5932"
```

```
  ORBIT_START = "01/07/1996 14:37:39Z"
```

```
  ORBIT_PATH_NUMBER = 90
```

```
END_OBJECT = ORBIT_MODEL
```

```
*****
```

### 26.21.6 howto\_register\_pge

```
# First prepare PGE and ESDT ODL files
```

```
# Update database
```

```
xterm -sb -sl 256 -bg maroon -fg "papaya whip" -cr "papaya whip" -fn
```

```
"*l*s*type*b*r*140
```

```
*" -T 'SSIT: Science Metadata Database Update' -n 'Science Metadata Update' -e
```

```
/usr/ecs
```

```
//OPS/CUSTOM/bin/DPS/EcDpAtDefinePGE &
# Update performance info
/usr/ecs//OPS/CUSTOM/bin/DPS/EcDpAtOpDbGui ConfigFile
/usr/ecs//OPS/CUSTOM/cfg/EcDpAtOp
DbGui.CFG ecs_mode OPS &
*****
```

### 26.21.7 howto\_register\_dpr

```
#####
# Make sure STMGT and SDSRV are up
#####
# Use either ECS Assist on p0acs03 *and* p0drg01,
# Alternatively, use ps:
p0acs03:> ps -ef | grep EcDsScienceDataServer | grep TS1
  sdsrv 24410  1 0 10:17:57 pts/3  0:33
/usr/ecs//TS1/CUSTOM/bin/DSS/EcDsScience
DataServer ConfigFile /usr/ecs//TS1/CUS
p0drg01:> ps -ef | grep Server | grep TS1 | grep ConfigFile
  stmgt 3786  1 0 Dec 30 ?  10:39
/usr/ecs/TS1/CUSTOM/bin/DSS/EcDsStStaging
DiskServer ConfigFile /usr/ecs/TS1/CUS
  stmgt 3803  1 0 Dec 30 ?  10:31
/usr/ecs/TS1/CUSTOM/bin/DSS/EcDsStStaging
MonitorServer ConfigFile /usr/ecs/TS1/
  stmgt 3770  1 0 Dec 30 ?  16:18
/usr/ecs/TS1/CUSTOM/bin/DSS/EcDsStArchive
Server ConfigFile /usr/ecs/TS1/CUSTOM/
  stmgt 3815  1 0 Dec 30 ?  10:59
/usr/ecs/TS1/CUSTOM/bin/DSS/EcDsStFtpDisS
erver ConfigFile /usr/ecs/TS1/CUSTOM/c
# If any of these are not present, that server is down.
# You must arrange to have it up before continuing
*****
```

### 26.21.8 Using Production Request Editor and Planning Workbench

```
PRE:
telnet p0pls01, cmops, dce_login
ops, cd utilities,
then invoke EcplStartPRE_IF OPS 3 &
PWB: telnet p0pls01, cmops, dce_login
ops, cd utilities, invoke EcPISlayAll prior to using PWB.
  then invoke EcPIStartAll OPS 3 & or 2
  times used for plan activation: 01/01/1990 time 00:00:00
AutoSys- To Monitor DPS , telnet to: p0sps06_srvr
#####
```

### 26.21.9 howto\_Make a Production Request

#####

```
rlogin p0pls01 -l pls
dce_login
awhitele
cd /usr/ecs/TS1/CUSTOM/utilities
set path = ( /usr/bin )
source .buildrc
setenv DISPLAY mojave:0.0
# Make sure no one else is running PREditor, then run it
/usr/ucb/ps -auxwww | grep -i pre | grep TS1
EcPIStartPRE_IF TS1 1
Click PREdit
Click PGE, select it, OK
Set time to input, e.g. (CPGE1)
06 12 1997 00 00 00
06 14 1997 00 00 00
```

\*\*\*\*\*

### 26.21.10 Additional SSI&T Howto\_procedures and Production rules taken from PDPS tests documented in the following files last updated 01/14/00:

```
SCF: cd /home/PDPS/docs - look through list of 'howto_s'
production_rules_wp.doc*
Drop3Scen2.txt
HowToCompileAndRunSyntheticPGE
HowToDealWithDPSDeadLocks
HowToFakeSubscriptionNotification
HowToInstallOnComanche
HowToStartAutosysAndViewJobStates
HowToActivateAPlan
HowToDeleteAndRecreateJobs
HowToSetUpPlanning
Tiling.txt
HowToRunProductionStrategyGUI
SpatialQuery.txt
HowToInsertMultiFileGranules
HowToStartDPS
ModisDataList
HowToUseSubscriptionServerDriverToSendSubscriptionNotification
HowToReactivateReplan
VerifiedList
HowToStartQaMonitor
HowToTestFaultRecovery
HowToTestGroundEventJobs
HowToCleanAutoSys
HowToInstall-General
```

HowToInsertData  
MergeList  
HowToEnterGroundEvents  
HowToTestDynamicMetaDataQuery  
HowToReacquireAGranule  
ReacquireGranule.sql  
HowToAdHocReprocessPRs  
HowToTestDatabaseCleanupScript  
HowToDoProfiling  
HowToRunMulti-GranuleESDTsTest  
HowToRunSSITAcquireTool#  
HowToRunResourcePlanning  
HowToCreateDprepTarFile\*HowToRunBROWSETest~  
HowToRunBROWSETest  
HowToRunSpatial  
mailfile  
HowToRunDataDay-InterimFilesTest~  
HowToTest  
HowToInstallPlanning~  
HowToRunDataDay-InterimFilesTest  
HowToInstallPlanning  
HowToRunSSIT  
HowToRunOptionalDPRs~  
EndToEnd  
HowToRunASTER  
HowToRunOptionalDPRs  
HowToRunTiling~  
HowToRunMostRecentGranule~  
HowToRunMostRecentGranule  
HowToRunTiling  
HowToTestAlternateInput~  
HowToTestAlternateInput  
HowToRunASTER#  
HowToRunModis  
HowToRunMISRLIKE~  
HowToRunModisPlus  
HowToRunMISRLIKE  
HowToRunASTERRoutine  
HowToRunDPREP  
HowToRunMostRecentGranule#  
HowToRunTiling.odl  
HowToTestAlternateInput~  
HowToRunASTERRoutine  
WhatTestsWhat

HowToRunSSIT  
datadepend\_dp  
HowToCreateDprepTarFile.old  
HowToRunModis.old  
HowToRunModisPlus#  
HowToRunMRG+MetadataCombo~  
HowToRunMRG+MetadataCombo  
EndToEnd  
HowToTestOutputMFG~  
HowToTestOutputMFG  
HowToRunSpatial  
HowToRunDPREP\_Func\_Lab~  
HowToTestGroundEventJobs  
HowToTestDatabaseCleanupScript  
HowToRunASTERRoutine  
HowToTestDatabaseCleanupScript  
HowToRunBROWSETest  
HowToRecoverNotifications  
LaRC\_Synthetic\_EndToEnd\_Performance Verification Center (PVC)~  
LaRC\_Synthetic\_EndToEnd\_Performance Verification Center (PVC)  
HowToRunMISRISH  
HowToRunMISRSIM  
HowToRunMISRLIKE~  
HowToRunDataDay-InterimFilesTest  
foo  
HowToTestAlternateInput  
HowToTestAlternateWithInternalDynamics\_bad  
HowToRunMISRLIKE  
xemacs  
HowToRunResourcePlanning  
HowToTestAlternateWithInternalDynamics\*  
error.log  
HowToRunMRG+MetadataCombo#  
hgj\_spatial  
HowToRunASTER  
HowToRunCG+MetadataComboOLD  
dead.letter  
HowToRunSpatialPad#\*  
HowToRunMISRLIKE#.NeedAnsToQuesAboutMISRLIKEprofile2  
HowToRunSpatialPad~\*  
HowToRunAIRSLIKE~  
HowToRunModis#  
HowToRunShortModis  
HowToRunShortModis#  
HowToRunMulti-GranuleESDTsTest.short~

HowToRunMulti-GranuleESDTsTest.short  
HowToCreateDprepTarFile.bh.update.oct8  
#HowToRunMulti-GranuleESDTsTest.short#  
HowToRunAIRSLIKE  
HowToRunASTER1  
HowToRunMulti-GranuleESDTsTest.jutout~  
HowToRunMulti-GranuleESDTsTest.jutout  
HowToRunMISRLIKE  
HowToRunASTER#  
HowToRunSSITforOnDemand~  
HowToRunOnDemandPge~  
HowToRunSpatialPad\*  
HowToRunClosestGranule  
HowToRunCG+MetadataCombo  
HowToRunModis  
HowToRunDPREP\_Func\_Lab  
HowToRunASTERnew.html~  
HowToRunMulti-GranuleESDTsTest  
HowToRunSSIT.html~  
HowToRunResourcePlanning.html~  
HowToRunASTER.html~  
HowToRunDPREP#  
HowToRunModis.html~  
HowToRunResourcePlanning.html  
HowToRunQAMonitor.html~  
HowToRunMISRLIKE.html~  
HowToRunModis.html  
HowToRunSSIT.html  
pdpsTestIndex.html~  
TestIndex.html~  
HowToRunMulti-GranuleESDTsTest.html~  
HowToRunQAMonitor.html  
HowToRunMulti-GranuleESDTsTest.html  
HowToRunMISRLIKE.html  
HowToRunOnDemandPge  
HowToDeleteAndRecreateJobs.html  
LabIndex.html~  
HowToRunASTER.html  
SCCS/  
LabIndex.html

**26.21.11 Technical Notice concerning Leap Second/DPREP**  
Notice of Change to Toolkit Ephemeris and  
Attitude Interpolation

March 15, 1999

Effective with a late patch to Drop 4PY, the time interval over which the Toolkit will interpolate spacecraft ephemeris or attitude is reduced from 121 seconds to 60 seconds. (The normal interval between packets for AM1 is 1.024 seconds, except for FDD replacement ephemeris, which will use 1 second time intervals.)

### Impact of this Change

For reasons explained below, the only impact on real data processing would be to avoid the possibility of a less-than-ideal interpolation.

The impact on I&T would be that test data should always be generated or obtained with packet interval 60 seconds or less. There are a few inputs for the Toolkit test drivers, which are not a deliverable, but are occasionally supplied to Toolkit users, which (to save file space) are set up to work with 120 second packets. These lie in the file "orbsim.in" (which is, as explained, a PDPS add-on which is unsupported software when it is provided to users). To conduct tests without new and annoying failures, if you use this input file for "orbsim", you should edit it to replace "120" by "60" or less, globally. Results will not change significantly from the expected test results.

### Rationale for this Change

The SDP Toolkit uses an analytic, cubic polynomial method to interpolate ephemeris that is extremely fast, but which could generate undesirable and spurious variations if applied across too large a time interval, or to data that are not smooth.

DPREP, which will process all incoming ephemeris data, has a robust method for patching gaps up to 60 seconds, based on a least squares quartic fit, component by component, to position and velocity. Although this method is undesirably slow for repeated use within the Toolkit, it is ideal for DPREP, which runs only once on a data set. The existence of any gaps not repairable by DPREP (i.e. > 60 seconds) will trigger procedures to obtain replacement data files from FDD.

It is therefore unwise to allow the Toolkit to interpolate gaps which DPREP cannot fill, so it is being changed. The same limit is set for attitude. We expect no gaps whatever in FDD attitude, and the attitude is not of much use without the ephemeris, so this change was made consistently.

---

## 26.22 Using IQ Software to Create Reports

### 26.22.1 Creating Reports Using IQ Software

ECS no longer plans to offer a Report Generator GUI. Consequently, DAAC operations personnel must use other means to generate various types of reports.

IQ (Intelligent Query) software is a set of commercial off-the-shelf (COTS) products that provides flexible access to the PDPS database from which data for reports can be retrieved. The cost of that flexibility is a somewhat complicated process for initially setting up reports. However, once a particular type of report has been set up, reports can be generated fairly quickly.

The procedure for creating reports using IQ software starts with the assumption that the Production Planner has logged in to the system.

### Creating Reports Using IQ Software

---

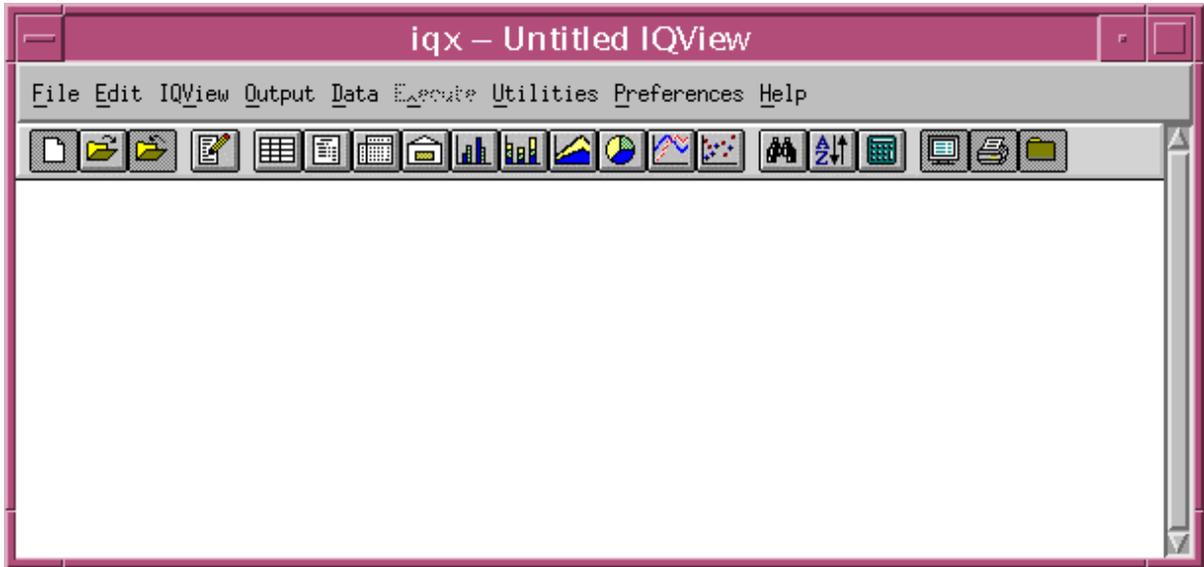
**NOTE:** If using an X-Terminal, it may be necessary to add the following line to the **.Xdefaults** file in the home directory before performing the task for the first time:

```
iqx*background:          grey
```

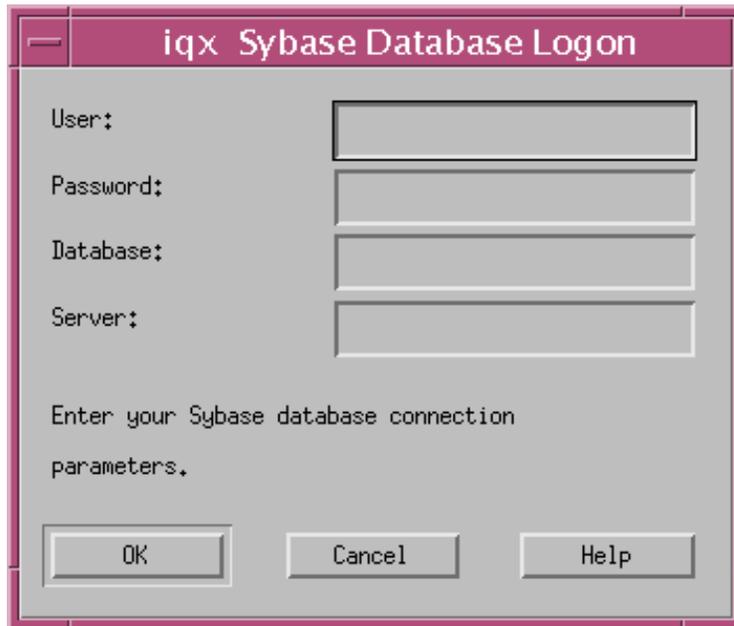
**NOTE:** Commands in Steps 1 through 8 are typed at a UNIX system prompt.

- 1** Type **rlogin *hostname*** refers to the host (e.g., **e0mss21**, **g0mss21**, **l0mss21**, or **n0mss21**) on which GUIs are to be launched during the current operating session. Multiple hostnames can be specified on the same line.
- 2** Type **setenv DISPLAY *clientname*:0.0** then press the **Return/Enter** key.
  - Use either the X terminal/workstation IP address or the machine-name for the ***clientname***.
  - When using secure shell, the DISPLAY variable is set just once, before logging in to remote hosts. If it were to be reset after logging in to a remote host, the security features would be compromised.
- 3** Open another UNIX (terminal) window.
- 4** Start the log-in to the Applications Server host by typing **/tools/bin/ssh *hostname*** (e.g., **e0mss21**, **g0mss21**, **l0mss21**, or **n0mss21**) in the new window then press the **Return/Enter** key.
  - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** (“y” alone will not work).

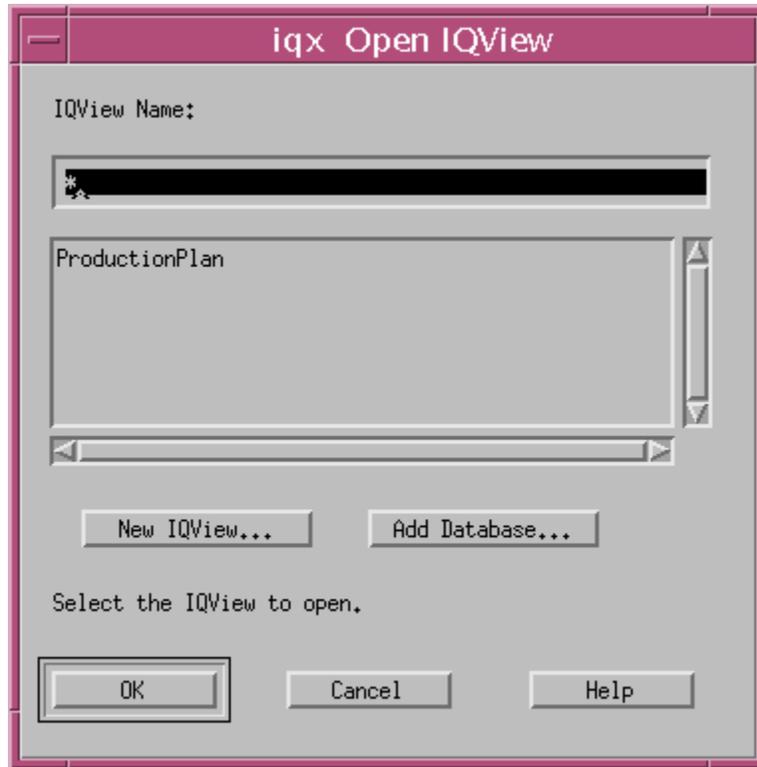
- If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key** '*<user@localhost>*' appears; continue with Step 5.
  - If you have not previously set up a secure shell passphrase; go to Step 6.
- 5** If a prompt to **Enter passphrase for RSA key** '*<user@localhost>*' appears, type your *Passphrase* then press the **Return/Enter** key.
- Go to Step 7.
- 6** At the *<user@remotehost>*'s **password:** prompt type your *Password* then press the **Return/Enter** key.
- 7** Type **setenv ECS\_HOME /usr/ecs/** then press the **Return/Enter** key.
- When logging in as a system user (e.g., cmshared), the ECS\_HOME variable may be set automatically so it may not be necessary to perform this step.
- 8** Type **cd /usr/ecs/MODE/COTS/ix5** then press **Return/Enter**.
- Change directory to the directory containing the IQ software (directory path may vary from site to site).
  - The *MODE* will most likely be one of the following operating modes:
  - OPS (for normal operation).
  - TS1 (for Science Software Integration and Test (SSI&T)).
  - TS2 (new version checkout).
  - Note that the separate subdirectories under /usr/ecs apply to (describe) different operating modes.
- 9** Type **ixx &** then press **Return/Enter**.
- If the GUIs are not displayed when the command **ixx** is given, try using **./ixx** instead.
  - The **ixx IQView** GUI (Figure 26.19.6-1) and either the **ixx Sybase Database Logon** GUI (Figure 26.19.6-2) or **ixx Open IQView** GUI (Figure 26.19.6- 3) are displayed.
- If IQViews have been defined previously, they are listed on the **ixx Open IQView** GUI (Figure 26.19.6-3); otherwise, a list of database tables is displayed.



**Figure 26.22.1-1. iqx IQView GUI**



**Figure 26.22.1-2. iqx Sybase Database Logon GUI**



**Figure 26.22.1-3. iqx Open IQView GUI**

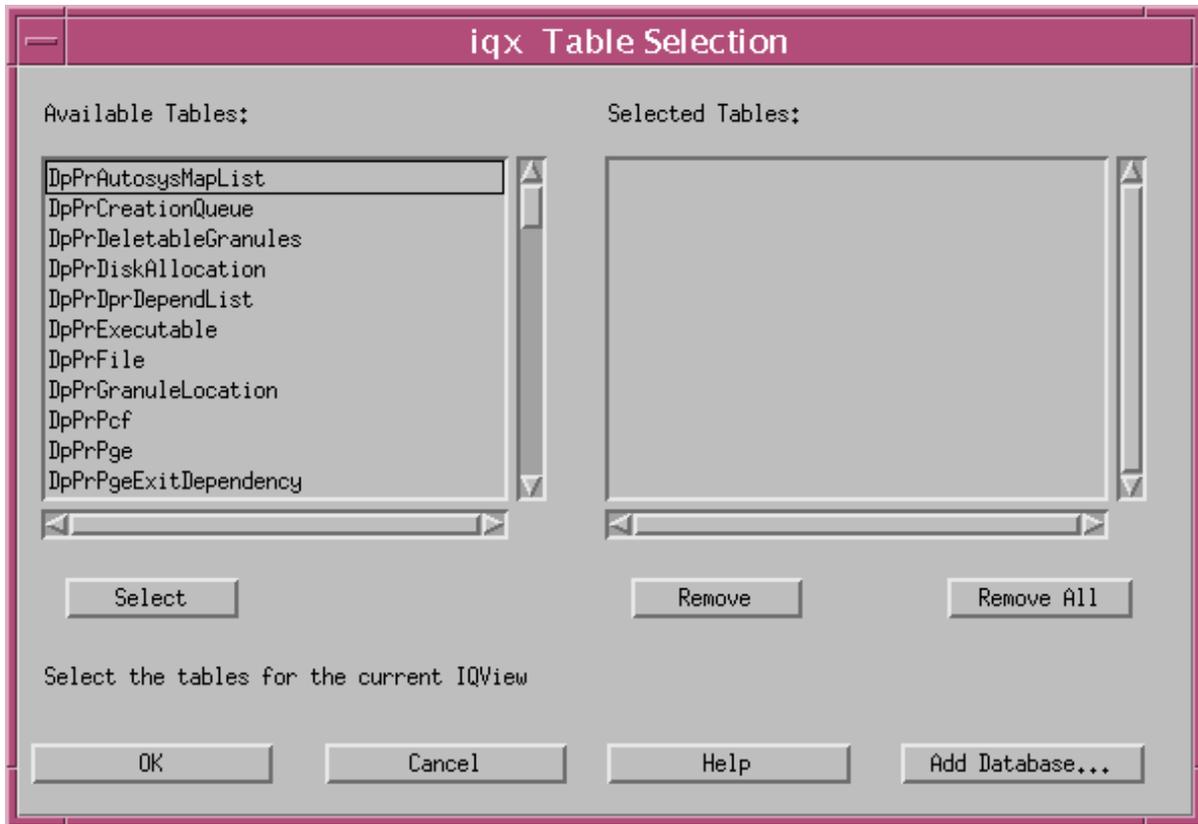
- If the **iqx License** dialogue box (Figure 26.22.1-4) is displayed, click on the **Cancel** button.
  - The **iqx IQView** GUI (Figure 26.22.1-1) and either the **iqx Sybase Database Logon** GUI (Figure 26.22.1-2) or **iqx Open IQView** GUI (Figure 26.22.1-3) are displayed.
- 10** If the **iqx Sybase Database Logon** GUI (Figure 26.22.1-2) is displayed, go to Step 16.
- 11** If the **iqx Open IQView** GUI (Figure 26.22.1-3) is displayed and the desired IQView has been defined previously, perform Steps 12 through 14; otherwise, go to Step 15.
- If IQViews have been defined previously, they are listed on the **iqx Open IQView** GUI (Figure 26.22.1-3); otherwise, a list of database tables is displayed.
- 12** If the desired IQView has been defined previously, highlight the IQView to be opened by clicking on its entry in the list of IQViews.
- 13** Click on the **OK** button.
- The **iqx Sybase Database Logon** GUI (Figure 26.22.1-2) is displayed.
- 14** Go to Step 16.



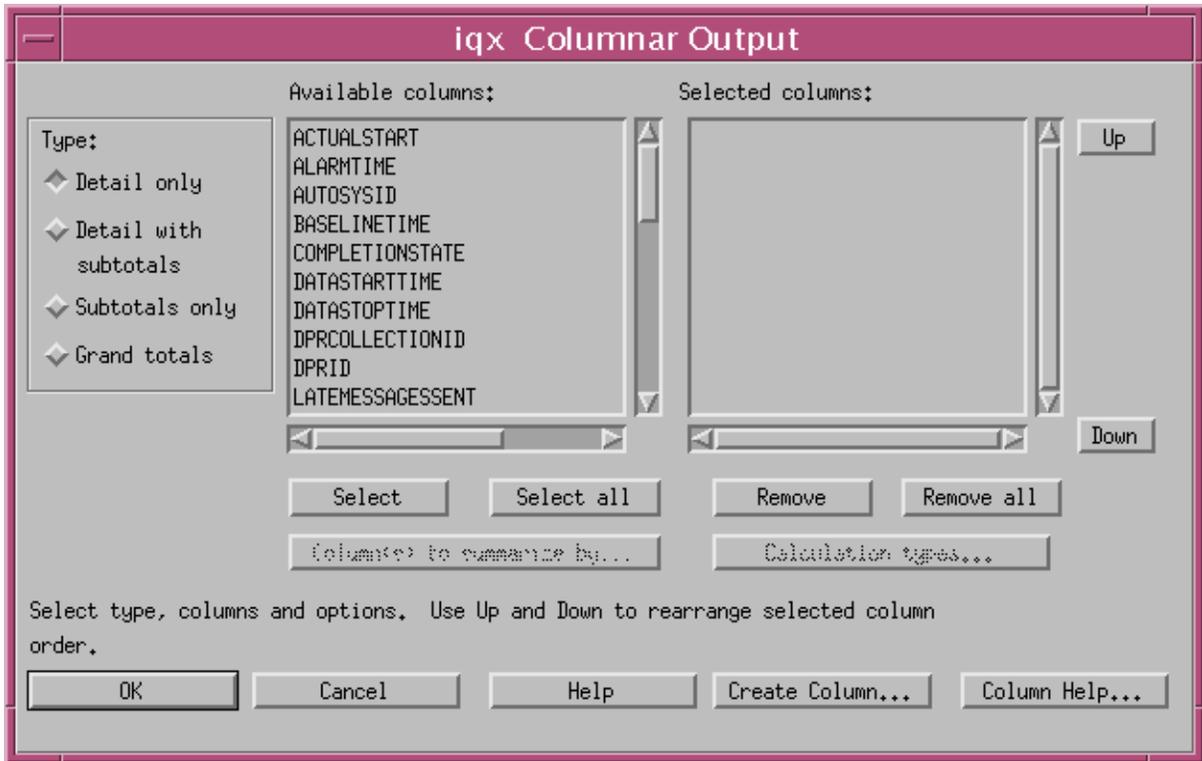
**Figure 26.22.1-4. iqx License Dialogue Box**

- 15 If the **iqx Open IQView** GUI (Figure 26.22.1-3) is displayed and the desired IQView has not been defined previously, click on the **Add Database...** button.
  - The **iqx Sybase Database Logon** GUI (Figure 26.22.1-2) is displayed.
- 16 When the **iqx Sybase Database Logon** GUI (Figure 26.22.1-2) is displayed, type the appropriate entries in the following fields:
  - **User:**
    - For example: **pdpsUsr**
    - The DAAC Database Administrator can provide the actual values to be entered.
  - **Password:**
    - For example: **dbpa\$\$wd**
  - **Database:**
    - For example: **pdps\_TS1**
  - **Server:**
    - For example: **x0pls02\_srvr**
    - Click on the **OK** button.
    - Either the **iqx Open IQView** GUI (Figure 26.22.1-3) or the **iqx IQView** GUI (Figure 26.22.1-1) is displayed.
    - If the **iqx Open IQView** GUI (Figure 26.22.1-3) is displayed, continue with Step 19; if the **iqx IQView** GUI (Figure 26.22.1-1) is displayed, go to Step 22.
    - Click on the **New IQView...** button.
    - The **iqx Table Selection** GUI (Figure 26.22.1-5) is displayed.

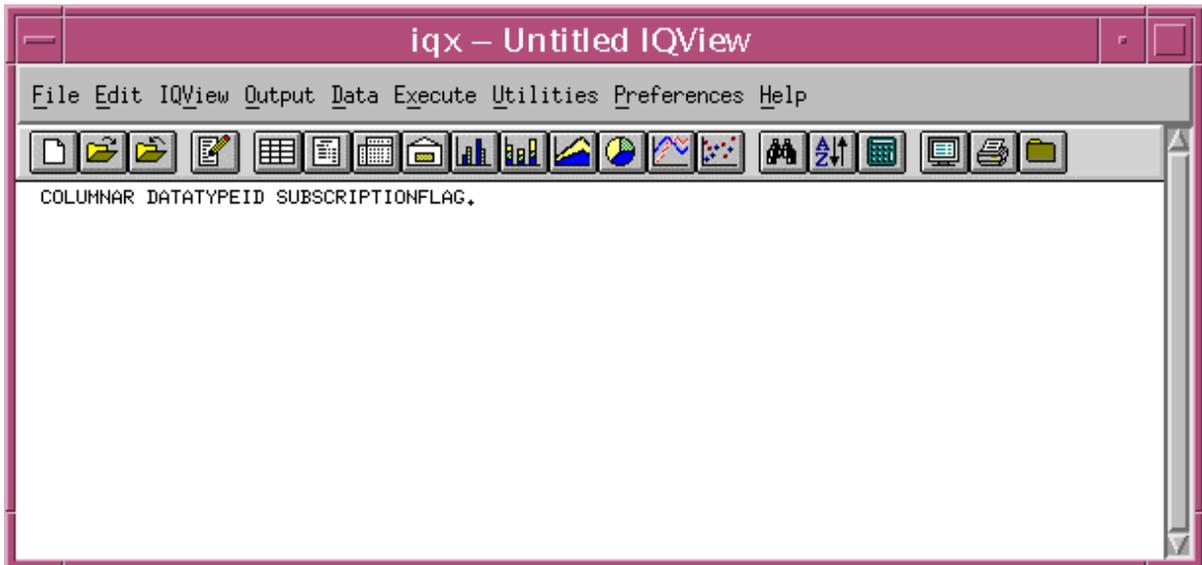
- Move database table names between the **Available Tables:** and **Selected Tables:** lists as necessary by selecting (highlighting) the name of the table to be moved, then clicking on either the **Select** or **Remove** button (as applicable) to move the table name to the other list.
  - Database tables and the columns within each table are described in the 311-series documents (e.g., 311-CD-503-001, Release 5A Planning and Data Processing Subsystem Database Design and Schema Specifications for the ECS Project). The documents are available on the ECS Data Handling System (i.e., at <http://edhs1.gsfc.nasa.gov>).
- 21** When the desired table(s) has/have been moved to the **Selected Tables:** list, click on the **OK** button.
- The **iqx IQView** GUI (Figure 26.22.1-1) is displayed.
- 22** Select **Output** → **Columnar** from the pull-down menu.
- The **iqx Columnar Output** GUI (Figure 26.22.1-6) is displayed.
- 23** Move database table column names between the **Available columns:** and **Selected columns:** lists as necessary by selecting (highlighting) the column to be moved, then clicking on either the **Select** or **Remove** button (as applicable) to move the column name to the other list.
- The order in which columns are listed in the **Selected columns:** list is the order in which the columns will be listed in the eventual report.
  - Database tables and the columns within each table are described in the 311-series documents (e.g., 311-CD-503-001, Release 5A Planning and Data Processing Subsystem Database Design and Schema Specifications for the ECS Project). The documents are available on the ECS Data Handling System (i.e., at <http://edhs1.gsfc.nasa.gov>).
- 24** If changing the order in which columns are listed in the **Selected columns:** list, select (highlight) the column to be moved, then click on the **Up** or **Down** button as necessary to reposition the selected column.
12. Highlighted column changes position in the **Selected columns:** list.
- 25** When the desired columns have been moved to the **Selected columns:** list, click on the **OK** button.
- The **iqx IQView** GUI (Figure 26.22.1- 7) is displayed.



**Figure 26.22.1-5. iqx Table Selection GUI**



**Figure 26.22.1-6. iqx Columnar Output GUI**



**Figure 26.22.1-7. iqx IQView GUI**

- The columnar selections are listed on the **iqx IQView** GUI as shown in Figure 26.22.1-7.
- 26** To generate a report make one of the following selections from the pull-down menu:
- **Execute** → **to Display** – to display the report on the terminal screen.
    - The **iqx IQ Output** GUI (Figure 26.22.1-8) is displayed.
    - Go to Step 35 after viewing the report.
  - **Execute** → **to Printer** – to print the report.
    - The **iqx Execute to Printer** GUI (Figure 26.22.1-9) is displayed.
    - Go to Step 29.
  - **Execute** → **to File** – to save the report in a file.
    - The **iqx Execute to File** GUI (Figure 26.22.1-10) is displayed.
    - Continue with Step 27.
- 27** Type a valid *path/filename* in the **Name:** field of the **iqx Execute to File** GUI (Figure 26.22.1-10).
- For example: **/home/cmshared/reportfile**
    - Where **/home/cmshared/** represents the path and **reportfile** is the file name.
- 28** Click on the **OK** button.

DATATYPEID	SUBSCRIPTIONFLAG
AM#001	1
AST_04#001	0
AST_05#001	0
AST_06#001	0
AST_07#001	0
AST_08#001	0
AST_09#001	0
AST_09#001	0
AST_09#001	15
AST_10#001	0
AST_10#001	15

**Figure 26.22.1-8. iqx IQ Output GUI**

**iqx Execute To Printer**

**Pages:**

- All
- Range

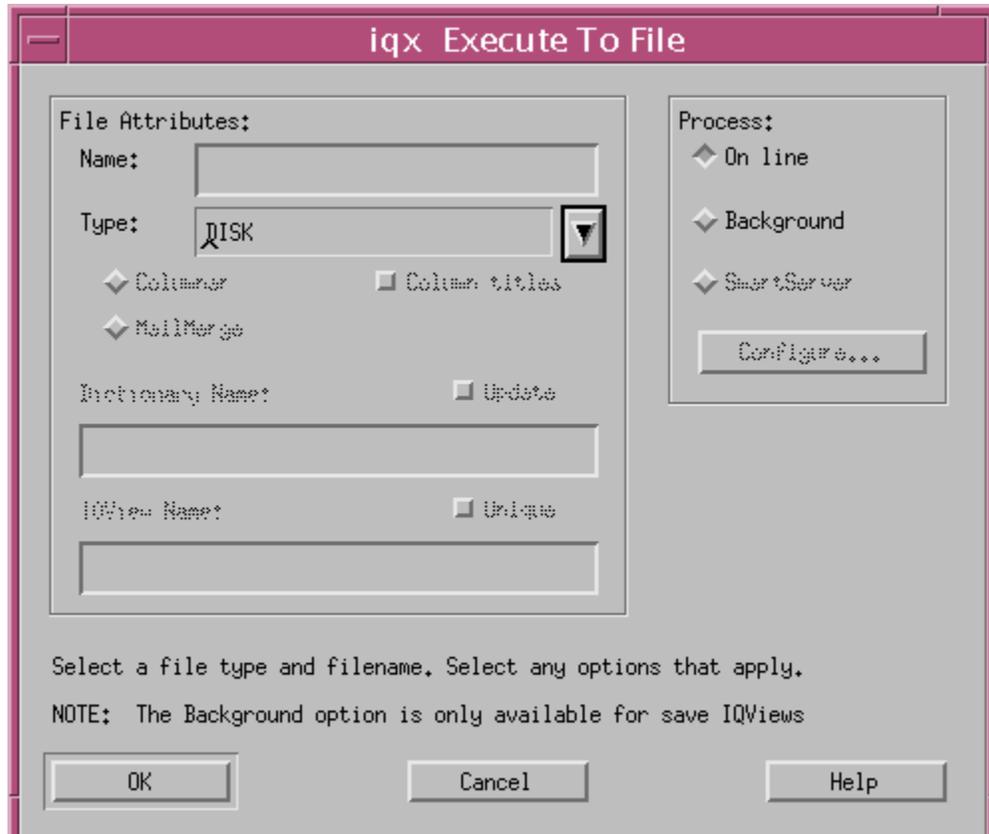
From:  To:

Number of copies:

**Process:**

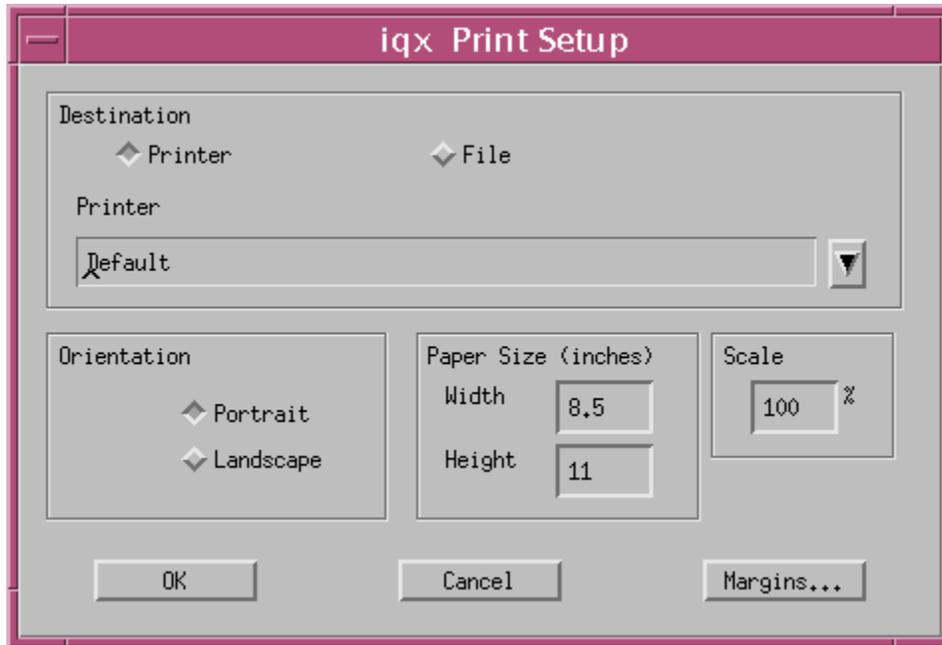
- Online
- Background
- SmartServer

**Figure 26.22.1-9. iqx Execute to Printer GUI**



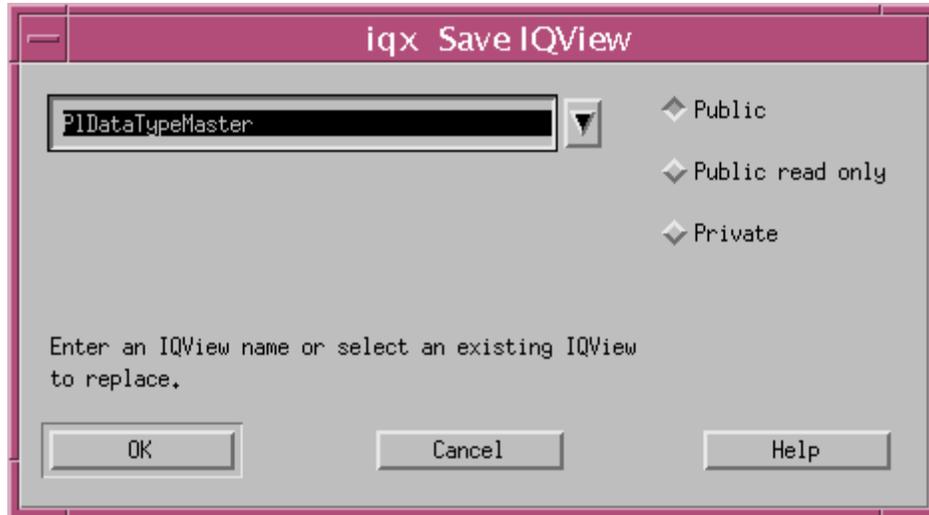
**Figure 26.22.1-10. iqx Execute to File GUI**

- Go to Step 35.
- 29** Click on the **Printer...** button on the **iqx Execute to Printer** GUI (Figure 26.22.1- 9).
  - The **iqx Print Setup** GUI (Figure 26.22.1- 11) is displayed.
- 30** To list the available printers, first click on the option button associated with the **Printer** field.
  - An option menu of printers is displayed.
- 31** Highlight the desired printer in the option menu.
  - The desired printer is shown in the **Printer** field.
  - For example: **Postscript printer one**.
- 32** If a report in landscape format is desired, click on the **Landscape** button.
- 33** Click on the **OK** button.
  - The **iqx Print Setup** GUI (Figure 26.22.1- 11) is dismissed.

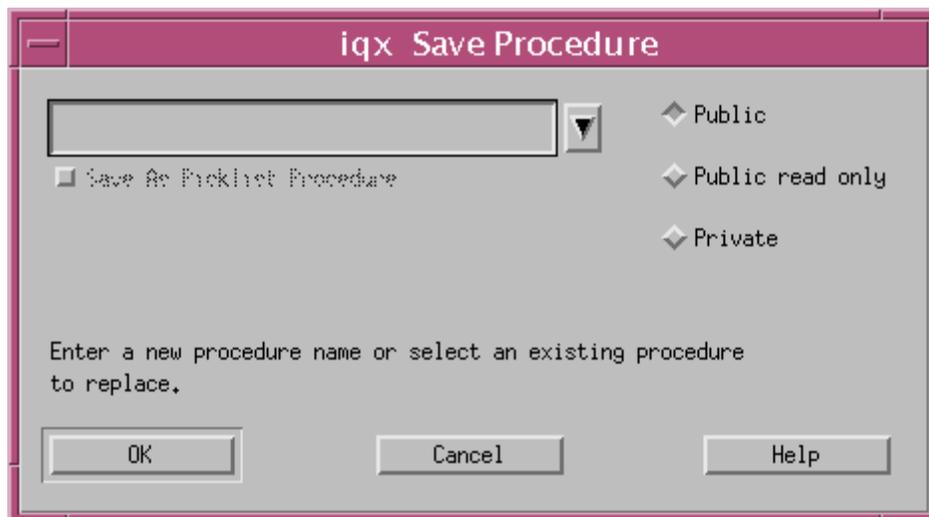


**Figure 26.22.1-11. iqx Print Setup GUI**

- The **iqx Execute to Printer** GUI (Figure 26.22.1-9) is displayed.
- 34** Click on the **OK** button.
- 35** To save the procedure/IQView, continue with Step 36; otherwise go to Step 43.
- 36** Select **File** → **Save Procedure As...** from the pull-down menu.
- The **iqx Save IQView** GUI (Figure 26.22.1- 12) is displayed.
- 37** Type a file name for the IQView in the name field.
- 38** Click on one of the following buttons if applicable:
- **Public.**
  - **Public read only.**
  - **Private.**
- 39** Click on the **OK** button.
- The **iqx Save Procedure** GUI (Figure 26.22.1-13) is displayed.
- 40** Type a file name for the procedure in the name field.
- 41** Click on one of the following buttons if applicable:
- **Public.**



**Figure 26.22.1-12. iqx Save IQView GUI**



**Figure 26.22.1-13. iqx Save Procedure GUI**

- **Public read only.**
- **Private.**

**42** Click on the **OK** button.

**43** Select **File** → **Exit** from the pull-down menu to exit from the **iqx IQView** GUI (Figure 26.22.1- 1).

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## 26.22.2 Formatting IQ Software Reports

[TBS]

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## 27. Inventory Logistical Management (ILM)

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### 27.1 XRP-II (Inventory Logistical Management {ILM})

ILM helps the M&O staff at the DAACs, EOC, and SMC to maintain records that describe all inventory components and their assembly structures and interdependencies. The database maintained by this tool, keeps chronological histories (a record of the transactions) of receipt, installation, and relocation of inventory items. ILM limits DAAC staff to accessing only those records, which correspond to equipment at their DAAC.

ILM is a set of automated tools that will assist the Procurement, Property Management, Maintenance, and Logistics teams in managing the tangible property of NASA's EOSDIS project. ILM is a heavily customized application developed utilizing the commercially available package XRP-II (Product Information and Inventory Management Modules). XRP-II is a manufacturing management system and its customization supports the required capabilities and functions of ILS. The application contains other functions beside the ILM tools. The ECS Management System Main Menu has selections for the Baseline Management tools which is not part of ILM.

XRP-II is a legacy base application. The application consists of a hierarchical menu screen structure and an imbedded COTS database (UNIFY). The hierarchical menu structure is built upon character oriented. **Once selected entered or deleted the actions cannot be reversed.** In addition XRP/ILM is case sensitive. The vendor has customized the original screens to be ECS specific. The menu screens must be navigated to reach the appropriate ILM function. The lowest level of the structure is a function data screen that displays data and/or accepts data input for the function selected through the menu navigation process. While an operator is logged into the XRP-II program he/she is engaged in a database session.

Use of the ILM tool involves considerations of the ECS business rules and general logistics concepts as applied on the ECS project. Some basic logistics definitions are provided below.

Each inventory item is identified by a unique Equipment Inventory Number (EIN), and in case of hardware items a physical silver sticker with the EIN is placed on the item. The most significant relationship maintained among inventory items is product structure. Product structure is the XRP-II term for the parent-component pairings that define the ingredients – or bill of material -- for an assembly. Product structures have corresponding active and inactive dates that establish the time frame during which the pairing is in effect.

## 27.2 ILM Operator Functions

Each user/operator is assigned to a work group and the ILM menu options available are controlled based on the individual's role. Note: roles can be added or changed according to user need. The following roles currently exist within ILM:

- ILMADMIN All functions within the ILM
- ILMADMND All functions require by DAAC System Administrator
- ILMUSER All ILM operator privileges only
- ILMLOG ILM Logistics User
- ILMMAINT ILM Maintenance User
- ILMMNTD ILM DAAC Maintenance User
- ILMQUERY ILM User with query privileges only
- ILMUPDT ILM User with update privileges only

Additionally there is an XRP administrator (XRPADM) who will have all privileges and is responsible for the operation of the XRP application. Customization of individual operator privileges is done on an as needed basis by an ILM system Administrator. The system tools provide the functions to revise the user privileges.

## 27.3 General Information

### 27.3.1 Using XRP

- The XRP application is case sensitive. It interprets data exactly as it is entered and takes the case of your input string into account. If something is in UPPER CASE, follow convention and put the request or data entry into UPPER CASE too.
- Pressing the <ENTER> key after each entry is required. Otherwise, the data entered may not be processed.
- The XRP application user interface is character based (not GUI). Keys handle navigation, selection, and moving. Each user interface screen has a set of active bottom line commands defining the keyboard letters, or function keys for activating functions or commands.
- **The mouse has limited capability with in ILM.** ILM is not GUI driven; consequently, there is no cutting or pasting, placing the mouse pointer on an item and double clicking, etc. ILM is a character base system that requires the user to enter information, use bottom line commands, and press keys to start functions or commands.

### 27.3.2 ILM System

- The ILM System was designed to assist in the tracking of Government Property items for each site and in a consolidated manner.
- The ILM System is a character based, menu driven system based upon the UNIFY database.
- Each screen provides the user with simple and quick one or two keystroke commands to control entry and editing of data.
- System administrators have the ability to easily modify screens, menus, and reports to meet changing requirements and individual user needs.
- Included are functions for transferring data between sites and the SMC.
- Reports and screens at the SMC can provide consolidated views of material and requirements.

## 27.4 Quick Start Using ILM

ILM inherited a character-based user interface from the XRP-II application, employs screens for data entry and report generation, and menus for navigating to the screens. Data is entered via the keyboard in fields that are traversed from left to right, row by row. On data entry screens, labels for fields whose values can be modified are displayed in upper case; those that can not be modified have only the first letter capitalized. The database is updated every time a field's value changes, and a record of that change is written to a transaction log.

Most data entry screens have a form and a table view. Form views offer full screen layouts of a data record's fields, whereas table views offer rows of records in a window that is panned to see columns of fields. Some screens' table views, however, contain fewer fields than their corresponding form views. This is caused by system limitations on a table view's panes.

Numerous functions can be performed on the data entry screens. Commands available to an operator are screen-dependent and are listed near the bottom of each screen (hence their name: bottom-line commands). The **more** command helps the operator cycle through them. The terminology used can be confusing. "Mode" is used in two different ways: 1) as used in the next paragraph to describe data impact (Add, Insert, or Modify) and 2) the F4-mode of keyboard impact on the selected field in the display.

It is important to note that the UNIFY database management system XRP-II uses does not support rules requiring entries in specific fields. ILM attempts some enforcement via the data entry screens, either by establishing default values where feasible when new records are created, or by blocking an operator from advancing the cursor past a null field when in Add, Insert, or Modify modes. However, database updates can occur in ways that bypass these mechanisms, so operators must ensure required data is entered.

### 27.4.1 Invoking ILM from the Command Line Interface

To invoke the ILM program the operator must be logged in to the appropriate server and be registered with XRP for the appropriate privileges.

To execute ILM from the command line prompt use:

**ilmusr**

This script solicits the identity of the operator's workstation. When prompted the operator must provide either the workstation name or its IP address. This information is normally posted on a sticker on the workstation monitor. The script then starts XRP-II, and passes to the operator's userid it obtained from the system. The screen that is displayed after the XRP-II login is determined by XRP-II based on the user's ID and password.

Upon entering a valid userid and password the initial screen for the user will be displayed. The initial screen is associated with a specific userid/password. ILM users will be assigned to Groups according to the role for which their userid/password is valid. ILM privileges are dependent on the Group assignment. ILM privileges include function selections, data modification capability and report selection. *The configuration of the initial screen, screen modes, and function selection may result in the display of a data screen that is not exactly as shown in the presentation below.*

**Table 27.4.1-1. Procedures to Log into ILM**

PERFORM	ACTION
Log on to XRP server at local site	At the Unix prompt type 'telnet <XRP server at local site>'
Provide log in information	At the login prompt A. Enter login name and press 'enter' B. Enter password and press 'enter'
Invoke ILM and display on the screen	A. Type 'ilm' and press 'enter' B. Type 'ilmusr' and press 'enter' C. Enter hostname, or IP address of the machine you are working on, so XRP knows where to display the screen

**Remember to press <ENTER> after each field.**

## 27.5 Commands and Functionality

The bottom line commands for each menu screen functions the same as the main menu. Each data screen also has bottom line commands. Generally, the bottom line commands that are invoked with the single letter in bold print. For commands with an "already used" first letter, a slash, "/", is used as part of the command an example this would be /s command. A period, "." is used for the third occurrence of a leading letter.

Note that the bottom line commands appearing on any screen are dependent on the user's attributes. Not all the commands listed for a screen may be appropriate to specific users.

A set of "standard" bottom line commands occurs on nearly all the ILM data screens.

While entering data into ILM you may notice that /zoom appears at the bottom of the screen for a given field. This is an indication that a ZOOM list is available to assist with data entry selections.

The following sections discuss each of the command and function keys in ILM. Table 27.5-1 describes menu function keys.

All ILM menus are similar in appearance and function the same way. Only the titles and selections vary.

**Table 27.5-1. XRP-II menu Function Key bottom commands**

F1	Function Key 1 - <b>help</b>	Get a description for the highlighted option
F3	Function Key 3 or control p - <b>prior menu</b>	Move back to the previous menu
F5	Function Key 5 or control b - <b>select</b>	Select the highlighted option
F8	Function Key 8 or control d - <b>exit</b>	Exit the tool (XRP-II to the Unix command line)

### 27.5.1 Cursor Motion

The four arrow keys (UP, DOWN, LEFT and RIGHT) are used to move the cursor to various fields of the screen. A number may be entered before depressing an arrow key in order to move to the cursor multiple fields at once. The current number that has been entered is displayed at the bottom left hand corner of the screen. If a DOWN arrow is entered when the cursor is at the bottom of a table view screen, then, assuming there is more data in the file, the screen is redrawn to display the data shifted a half page down. Similarly, the display may be shifted a half page upwards by entering an UP arrow at the top of the screen. Cursor motion via the arrow keys is limited to the current page plus a half-page shift.

### 27.5.2 Next or Prior

The bottom line “**n**” (Next) and “**p**” (Prior), when in the form view (one record on the screen) these commands move the display to the next or prior record. When in the table view (multiple records per screen) these commands move to the next or prior page of records. A number may be entered prior to the command as in “**10n**” which advances the display 10 records when in the form view or ten pages when in the table view.

### 27.5.3 View Command

This command toggles the display between the form and table views of the data. The table view shows basic information for several records at once. The form view shows all of the fields of the current record. For records with too many fields to fit across the screen when in the table view, the Left, Right, and justify commands described later may be used to move the display to the left or right.

### 27.5.4 Find Command

This command is used to find a record based on data entered. Data may be entered at one or more fields of the display and a partial string may be entered. Datalook (is a utility that searches the database for specified information) to clear the screen and allows the user to enter data into one or more fields to find. Pressing “**F5**” begins the search.

### 27.5.5 Go Command

The Go command allows the user to go to the First record, Last record, or the specified record number. To use the Go command type 'g' for Go. A prompt will come up stating "GO: First, Last, or Record Number, or Quit?" Type in the first letter to specify where to go (i.e. enter 'f' for first record). The entry of a number followed by 'g' for Go causes the display to shift to the specified record number. For example:

**0g** or **g** or **1g** moves to the start of the file  
**10g** moves the cursor to record 10  
**1000g** moves the cursor to record 1000

### 27.5.6 Select Command

The bottom line 's' (Select) command allows you to select a subset of all the records in order to view, edit, or report on them. Once a set has been selected, the select command may be used again to select a subset of the set.

### 27.5.7 Selection Criteria

Data may be entered at one or more fields in order to specify the records to be selected. The selection function may be initiated either from the table or form views, but sometimes it is necessary to first switch to the form view if there is insufficient room to enter the desired selection specifications when in the table view.

There are two basic kinds of selection capability:

- a. **Exact matching**, where the user types exactly what the selected records are to contain.
- b. **Inexact matching**, where special characters are entered which are expanded into patterns during the matching process. The inexact matching provisions described below also apply to range fields (i.e. Account Number or Range).

Some examples of inexact matches are numeric and date ranges ( for example, numbers from 1 to 100, dates before 1/1/87, or dates from 3/1/87 to 4/1/87), or substring matching (all the strings that contain the name "Smith").

#### 27.5.7.1 Exact Matches

To specify an **Exact** match, simply fill in the field or fields on the screen with the exact data to select for.

#### 27.5.7.2 Inexact matches on String Fields

To specify an inexact match on string fields, use the following special characters.

- ? The "**wild character**". The question mark matches any single character. Thus to find all the Smith's whether spelled "Smith" or "Smyth", use the specification "Sm?th"
- \* The "**wild string**". The asterisk matches any string of characters of any length, including zero length strings (also called "**null strings**"). A \* is automatically appended to the end of all string specifications.

[...] The character class framed by the brackets matches any single character that is a member of the class. For example, [apq] matches any of the letters a, p or q. Ranges of characters may be specified by separating 2 characters by a dash (“-“). All upper case letters could be represented by the class [ABCDEFGHJKLMN-O-PQRSTUVWXYZ] or more conveniently as [A-Z]. All letters, upper and lower case together, can be represented as [a-Z]. Other classes can be similarly constructed.

If the string field contains numbers (eg. H0002) and the user wishes to inexact match on a range of these numbers it is important to understand that ranges within strings behave differently than ranges within numeric fields. For example a good range for a numeric field could be 1-9999. This is defined by the system to be all numbers  $\geq 1$  and  $\leq 9999$ . However, the range of [H00001-H99999] for a string would be defined as all strings starting with the letter H, or the numbers 0 and 9, or characters falling in the range of 1-H. If the user wanted to select all fields of H00001 through H9999, he could use H[0-9][0-9][0-9][0-9] if space permits.

### 27.5.7.3 Inexact Matches on Numeric Fields

**Inexact** matches on numeric fields, including dates and times, can be constructed by the following set of expressions.

- >f1** The “**greater than**” operation. All fields with values greater than the entered value will match.
- <f1** The “**less than**” operation. All fields with values less than the entered value will match.
- !f1** The logical “**not**” operation. All fields that do not match the entered value will match.
- F1-f2** The “**range**” operation. All field values that match the entered values, or are between the entered values will match. This is equivalent to  $\geq f1$  AND  $\leq f2$ .
- !f1-f2** This expression matches all field values that are outside the range of entered values. This is equivalent to  $< f1$  OR  $> f2$ .

Any number of fields on the screen can be filled in as described above. The result is to select from the records of the file those which match all of the entered values. Once a set of records has been selected in this manner, Datalook displays the selected records.

### 27.5.8 Sort Command

The bottom line “/S” (Sort) command allows the current records to be sorted via any field or fields of the screen. Enter a number (1, 2,...) at each of the fields to be included in the sort, in the order they are to be included. Then press “F5” command to initiate the sort.

If a negative number is entered at a field, that field is sorted in descending order instead of the default ascending order.

### 27.5.9 Note Command

This command activates a text area for the user to write notes about the displayed screen. The information is retrieved by the same user when in the same screen.

### 27.5.10 Add/Insert

These commands are used to add new records. The bottom line “/I” (Insert) command adds a new record or records before the current record while the bottom line “/a” (Add) command adds a new record or records after the current record.

### **27.5.11 Modify Command**

The bottom line “/m” (Modify) command is used to modify one or more fields of existing records. After modifying each field the cursor moves to the next field in the default direction, down in form view, or right in table view. Press “F3” to exit modify mode.

### **27.5.12 Delete Command**

The bottom line “/d” (Delete) command offers a choice of deleting “line-by-line” or multiple records at once. If the “line-by-line” option is selected each entry of a down arrow deletes the current record. If, instead, a number is entered, the logic deletes the specified number of records.

### **27.5.13 Write, Execute Command**

These commands appear only on screens that can drive an executable function. The bottom line “w” (Write) command is used to save the current record of the screen in a file named by the user. This file may then be referenced in a UNIX script that executes the function in **BATCH** mode. The bottom line “e” (Execute) command is used once the screen data is edited in order to start execution of the underlying function.

### **27.5.14 Items Command**

The bottom line “I” (Items) command appears only on header-line item combination screens, such as are used for Purchase order or Work Order. When on the EIN menu (header record) pressing “I” activates the item screen.

### **27.5.15 Help Command**

The bottom line “h” (Help) command on the main menu provides information concerning the screen, the fields of the screen, or Datalook commands. If the commands option is selected you may enter the letter or prefix plus letter that activates the command to see the help information for that command.

### **27.5.16 More Command**

The “m” (More) command cycles the bottom line prompt through all of the available menu choices.

### **27.5.17 Quit Command**

The bottom line “q” (Quit) command exits the screen.

### **27.5.18 Zoom Command**

When the cursor is at a field which is related to data in a different table of the database, the bottom line “/z” (Zoom) command appears at the right of the screen. If the command is executed, Datalook opens a window to a different screen which displays the related data. The standard commands (Find, Go, Next, Prior, or arrows) may be used on the data in the window. If the user tags the field (the **tag** command is described later) and exits the zoom screen, the tagged value is returned to the initial screen. The “/z” (Zoom) option also appears when it is applicable while adding records or modifying fields.

### **27.5.19 Left, Right, Justify Commands**

They allow the data window to be shifted left or right for screens, which have, too many fields to be shown on one page. The bottom line “j” (Justify) command causes the page to start with the current field at the left.

### **27.5.20 Tag, Untag Command**

Tagged fields are used to identify default field values to be used when adding records or copying data into one or more records. If the user enters the “t” (Tag) command when the cursor is at a specified field, the field is tagged. This highlighted field in a manner (such as reverse video, or half intensity, depending on how the screen has been interfaced to the UNIX operating system). Only one field in a specific column of fields may be tagged at a time. A tagged field may be untagged either by entering the “t” (Tag) command again when the cursor is at that field, or by tagging some other field in the same column, or by entering the “u” (Untag) command which untags tagged fields. A tagged field remains tagged whether or not it is on the current screen until it is untagged.

### **27.5.21 Report Command**

The bottom line “r” (Report) command has a series of submenus which identify the report, its parameters, and the destination of the report. Every database maintenance screen has three built-in reports:

- a. a “Table Report” which follows the format of a table view screen, but adds a report header and pagination
- b. a “Form Report” which provides a single-page report of the form view for the current record
- c. An “ASCII Report” which displays the data in ASCII form without headers and pagination, suitable for loading into a spreadsheet or transmitting to another computer.

#### **27.5.21.1 Selecting Records for Printing**

Before printing a Table Report or an ASCII Report, the user may select a subset of records via the Select function. If no preselection has been performed, Datalook displays the numbers of the first and last records in the file and allows the user to accept these as the range of records to be reported on, or to modify them in order to report on a subset of the records. The first page of a table report shows the criteria used to select the records.

#### **27.5.21.2 Column Selection**

On Entering the Report Command, the user has the option of specifying the columns and the order in which they should be printed in a Table Report. If you do not specify the columns, the report starts with the left-most field screen and includes as many columns to the right as specified. The left-most field of the report may be controlled via the Left, Right, and Justify commands.

### 27.5.21.3 Report Format

The default ASCII Report format consists of data in ASCII form with fields separated by pipe (|) symbols. To generate a formatted report on a subset of the records, execute the select function before executing report.

### 27.5.21.4 Report Destinations

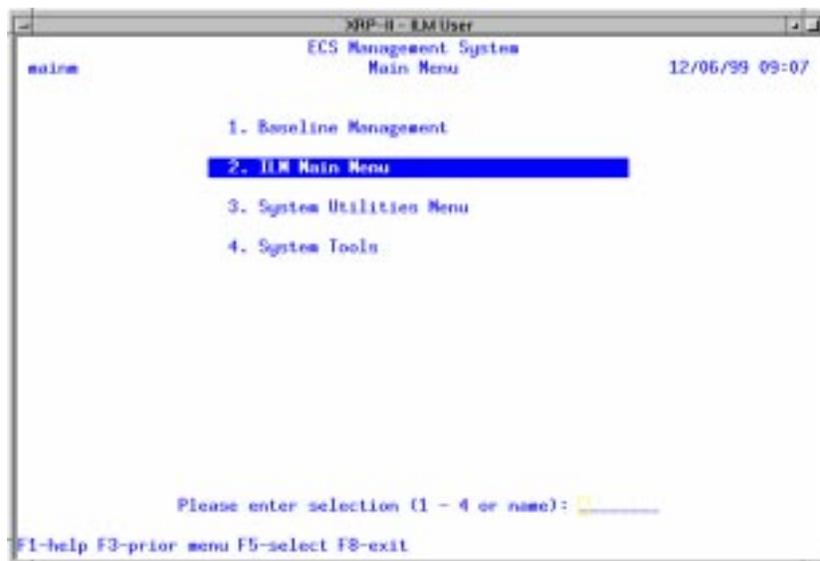
Once a report has been specified, Datalook offers the user a choice of report destinations. These choices may be 1) screen, 2) file, or 3) local printer.

If the report is not being sent to the screen, the user can specify whether or not it is to be run in background.

Once a report and destination have been chosen, the logic verifies that the width of the report is supported by the destination. If necessary, it retrieves the control characters necessary to put the output device into a mode such that it can support the width. If the report is too wide for the maximum width supported by the output device, the user is cautioned and may alter the destination or choose to proceed regardless.

## 27.6 ECS Management System Main Menu

The XRP top-level menu is ECS Management System Main Menu. The userid/password configured initial screen will generally be different for the operator. The ECS Management System Main Menu contains selections that are not ILM functions. Baseline Management is cover in a separate document.



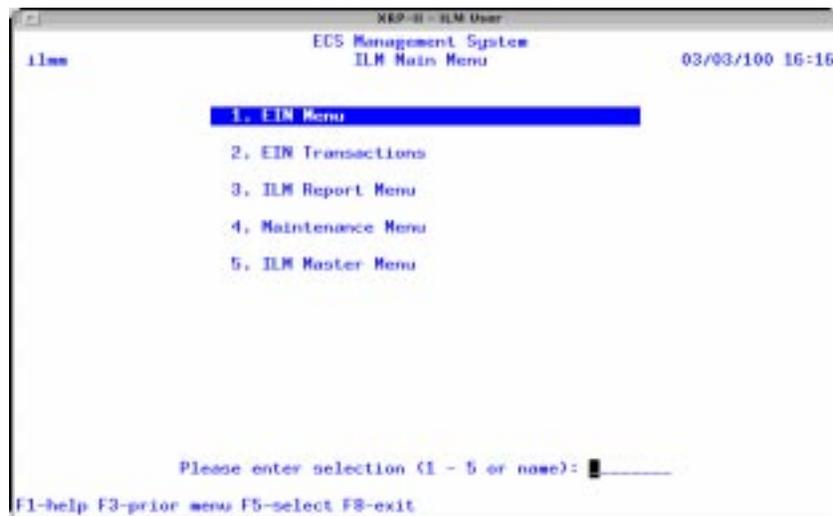
**Figure 27.6-1. ECS Management System Main Menu**

**Table 27.6-1. Main Menu Functions**

Menu item	Function	Section
Baseline Management	Provides access to XRP-II functions for maintaining control item and bill of material information	Refer to BLM section of 609
ILM Main Menu	Provides access to XRP-II functions for maintaining inventory, logistics, and maintenance information	27.6.2
System Utilities Menu	Provides access to XRP-II functions for maintaining system information that spans functional domains	27.12
System Tools	Provides access to aids for registering XRP-II users, assigning permission, customizing data entry screens and menus, and performing general-purpose database dumps and loads.	27.13

### 27.6.1 ILM Main Menu

This menu (Figure 27.6.1-1) provides access to ILM functions for maintaining inventory, logistics, and maintenance information. The sections following focus on the functions and features that are part of the ILM main menu.



**Figure 27.6.1-1. ECS Management System ILM Main Menu**

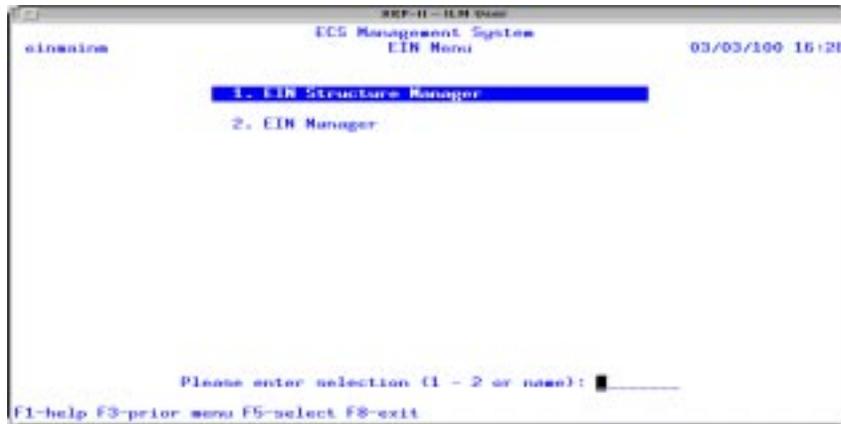
The ILM Main Menu lets the operators navigate to the following submenus:

**Table 27.6.1-1. ILM Main Menu Functions**

Menu item	Function	Section
EIN Menu	For browsing the catalog of EIN-controlled items	27.7
EIN Transactions	For browsing the log of all inventory transactions performed on items in the database	27.8
ILM Report Menu	For producing pre-defined reports	27.9
Maintenance Menu	For managing maintenance actions and data	27.10
ILM Master Menu	For browsing ILM parameters and reference information	27.11

## 27.7 EIN Menu

Options provided on this menu allow the operator to navigate to a set of screens for accessing the inventory information.



**Figure 27.7-1. EIN Menu**

The **EIN** menu is broken down into the following functions.

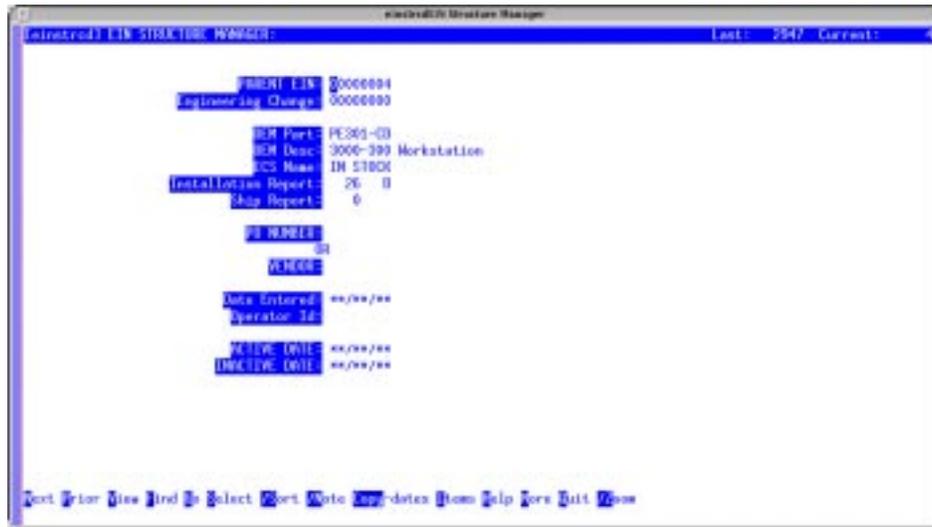
**Table 27.7-1. EIN Menu options**

Menu item	Function	Section
EIN Structure Manager	For browsing EIN structures for items at the local site	27.7.1
EIN Manager	For browsing data describing EINs at the local site	27.7.2

The following pages describe the screens, the data, and the process for reviewing EIN Controlled items data. Each selection item on the EIN menu is discussed, in the order on the menu screen.

## 27.7.1 EIN Structure Manager

This screen is designed to display structure for a machine and items attached to it. This screen will only be presented to the user in INQUIRY mode. All changes to the database via this screen are reserved to the ILS Property Administrator and will not be active at the DAACs.



**Figure 27.7.1-1. EIN Structure Manager Screen**

**Table 27.7.1-1. EIN Structure Manager Field Descriptions**

Field Name	Data Type	Size	Description
PARENT EIN	String	20	Parent EIN for the installation/structure.
Engineering Change	String	8	Engineering change number assigned when the record was added to the database.
OEM Part	String	34	OEM part number of the parent EIN
OEM Desc	String	40	OEM Description of the Parent EIN.
ECS Name	String	30	Name of the machine with which the item is associated.
Installation Report	Number	4	Installation report number assigned by the system when an installation had occurred.
Ship Report	Number	3	Shipping report number assigned by the system when the item was shipped.
PO NUMBER	String	10	Purchase order number against which the parent EIN was received.
VENDOR	String	6	Vendor code from whom the item was purchased
Date Entered	Date	2	Date when this record was added to the database
Operator ID	String	8	Login ID of the user who added this item to the database and is not modifiable by the user.
ACTIVE DATE	Date	2	Date the item is received and entered into inventory.
INACTIVE DATE	Date	2	Date to make the structure ineffective.

### 27.7.1.2 Item Page of the Structure Manager

This screen is designed to view children items for the Parent EIN entered on the header page. This screen always comes up in Table view.



**Figure 27.7.1-2. EIN Structure Manager Items page screen**

**Table 27.7.1-2. Items Page Field Descriptions**

Field Name	Data Type	Size	Description
EIN CHILD	String	20	Child EIN number of the item assigned to the Parent EIN.
OEM PART	String	34	OEM Part Number reflected from the EIN record of the child.
OEM DESC	String	40	OEM Description reflected from the EIN record of the child.
MOD/VER	String	24	Model/Version reflected from the EIN record of the child.
QTY PER	Number	3	This field is used more for consumable material application the parent items and reflects the quantity of the item that had been applied to the parent. This field defaults to quantity of one when the record is added. Database changes are reserved to the ILS PA
ACTIVE DATE	Date	2	Effective date on which the EIN child is assigned to the Parent EIN. NOTE: **/**/** = earliest system date.
INACTIVE DATE	Date	2	Effective date on which the EIN child is no longer assigned to the Parent EIN. NOTE: **/**/** = latest system date.

### 27.7.1.3 Checking the relationship status between Parent and its Children

The EIN Structure Manager enables the user to check and verify all the parts associated with a parent equipment. It lets the user identify whether a particular part is in use or inactive specified by the component's active and inactive date. It is also a pathway to gaining information about each child.

\* Information needed beforehand:

-Parent EIN

**Table 27.7.1-3. Procedure to Check relationship between Parent and its Children**

Perform	Action
Navigate to EIN Manager screen	A. Select ILM Main Menu – press 'enter' B. Select EIN Menu – press 'enter' C. Select EIN Structure Manager – press 'enter'
To find the parent EIN of interest and view its structure	A. Press 'f' to invoke the find command B. Enter the Parent EIN to find C. Press 'F5' to start the search D. Press 'I' to view the components
Exit	Press 'F3' to exit the item page

**Remember to press <ENTER> after each field.**

### 27.7.2 EIN Manager

This screen is designed to view ILM EIN controlled items. This screen is always presented in the INQUIRY mode. The operator may sort and select on any field on the screen and print ad hoc reports of sorted data, if desired, using XRP-II's report command. Refer to section 27.5.21 for instruction to generate ad hoc reports. All changes to the database via this screen are reserved to the ILS Property Administrator and that function will not be active at the DAAC's



**Figure 27.7.2-1. EIN MANAGER Screen**

**Table 27.7.2-1. EIN Manager Field Description (1 of 2)**

Field Name	Data Type	Size	Description
EIN	String	20	Identifier for an EIN-controlled inventory item.
ECS NAME	String	30	Name of the machine with which the item is associated
SERIAL NUMBER	String	30	Serial number of the item
HDWSFT CODE	String	10	Code for classifying inventory items by type.
MODEL/VERSION	String	24	Model or version of the item
MFG	String	6	Code used for the manufacturer.
OEM PART NUMBER	String	34	Manufacturer or Vendor's part number.
OEM DESCRIPTION	String	40	Description of the OEM PART NUMBER entered in the field above.
YEAR MFG	String	4	Year the item was manufactured.
RECEIVE DATE	Date	2	Date item was received from vendor
VENDOR	String	6	Vendor code whom the item was purchased from.
SOFTWARE LIC NUM	String	10	License number for a software type license item.
MAINT VENDOR	String	6	Code for the vendor who is the maintenance vendor.
WARRANTY EXP DATE	Date	8	End date for the warranty period. This field default to 365 days from the date of entry.
MAINT CONTRACT	String	15	Maintenance Contract number for maintenance on this particular item.
STATUS CODE	String	1	Status of the item and is controlled by transactions within the system. The following codes are included : R - Received; S – Shipped; I - Installed; A – Archived, and T-Transferred;
CONTROL ITEM ID	String	20	Identifier of the corresponding, version-controlled item in the Baseline Management system.
NASA CONTRACT	String	11	NASA contract number used for this item. The default number is NAS5-60000.
PO Number	String	10	Purchase order number against which the item was received.
Tran Code	Number	3	This field designates the transaction code. The value will always be set to '03'
Report Number	Number	4	Installation report number assigned by the system when an installation had occurred.
LOCATION	String	8	The actual location or site of where the item is.
BUILDING	String	6	Building number within the site where the item is.
ROOM	String	6	Room number where the item is or will be shipped to.
RMA#	String	6	Reliability Maintainability Availability number.
RELEASE CODE	String	10	Code for distinguishing the release status of the item.

**Table 27.7.2-1. EIN Manager Field Description (2 of 2)**

Field Name	Data Type	Size	Description
Installation Date	Date	2	The actual date this item was installed. The system sets the value during EIN installation processing.
Shipping Report Number	Number	2	Report number assigned to this item when the item was shipped.
USER	String	8	The user code of the person who has the item.
COMMENT	String	60	Miscellaneous information specific to the item.
NOTE	String	60	A message that can be associated with the item.

**Table 27.7.2-2. Procedure to Inquiry for EIN**

Perform	Action
Navigate to EIN Manager screen	From the Main Menu A. Select ILM Main Menu – press ‘enter’ B. Select EIN Menu – press ‘enter’ C. Select EIN Manager – press ‘enter’
To look for records of interest	A. Press ‘f’ to do a Find or ‘s’ to do a Select B. Enter the selection parameters (refer section 27.5.6 for a more detail instruction on advance selection) C. Press ‘F5’ to start the search
To view the Bill of Material of the selected record	There is a command on the bottom of the screen call ‘Bom’ (Bill of Material). The Bom command lists the components of the selected item. If the selected item does not have any component attached to it, ILM will state that ‘No records available’. To invoke the Bom command, press ‘b’.
To find the parent EIN of the selected item	The ‘Where’ command at the bottom of the screen lists all the parents that the selected item has been assigned to and the associated active and inactive date.
Exit out of the current function or screen	Press ‘F3’ to

**Remember to press <ENTER> after each field.**

## 27.8 EIN Transactions

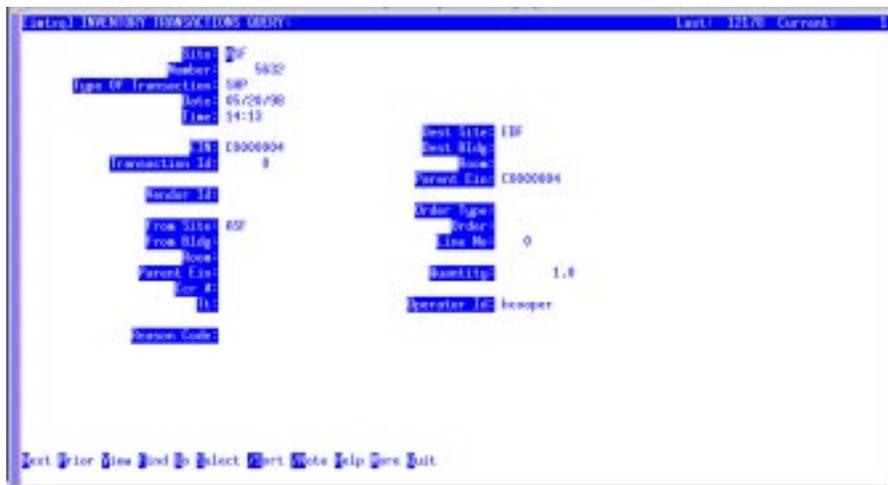
The EIN Transactions menu (Figure 27.8-1) provides access to a screen for browsing the log of past inventory transactions.



**Figure 27.8-1. EIN Transactions**

### 27.8.1 Inventory Transaction Query Screen

This screen allows operators to browse the log of all inventory transactions performed on items in the database. The operator may sort and select on any field on the screen and print ad hoc reports of sorted data, if desired, using XRP-II's report command. Table 27.8.1-1 describes the screen's fields.



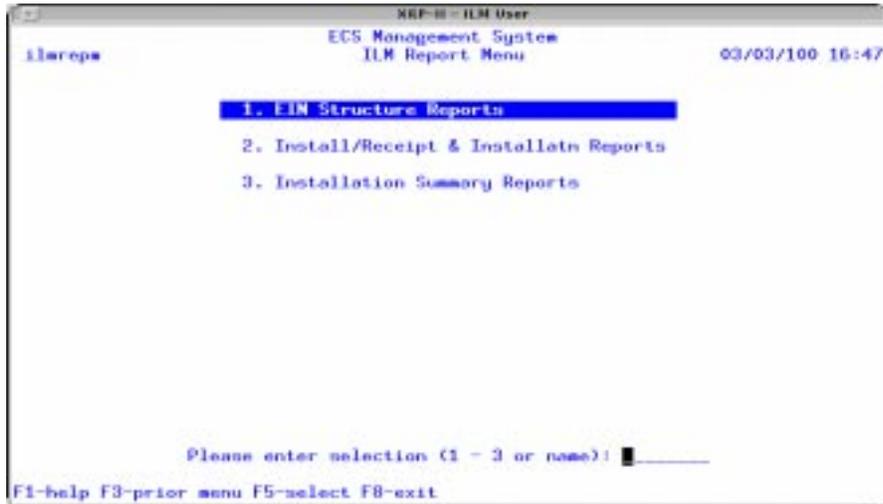
**Figure. 27.8.1-1. Inventory Transaction Query Screen**

**Table 27.8.1-1. Inventory Transactions Query Field Descriptions**

Field Name	Data Type	Size	Description
Site	String	6	Code for the site that entered the transaction.
Number	Numeric	8	Record number of database record being observed.
Type of Transaction	String	3	Code assigned to the type of transaction being performed. INS – Installation; REL = Relocation; TR = Transfer; ARC = Archive; SHP = Shipment; RX = Receipt;
Date	Date	2	Date the transaction was entered.
Time	Time	2	Time the transaction was entered.
Dest Site	String	6	Code for the inventory location gaining the item.
EIN	String	20	EIN of the item involved in the transaction. The operator may zoom to the EIN table and choose an EIN, if it had been entered there previously. (See the EIN Manager screen.)
Dest Bldg	String	6	Identifier for the building gaining the item.
Transaction Id	Numeric	6	Number assigned to a particular transaction
Room	String	6	Number for the room gaining the item.
Vendor Id	String	6	Code for the vendor from whom the item was purchased.
Parent EIN	String	20	EIN of the parent item involved in the transaction.
Order Type	String	2	Code for the type of order, if any, involved in the transaction. PO = purchase order; SO = sales order; WO = work order; VR = Return to vendor; CR = return from customer.
From Site	String	6	Identifier for the building losing the item.
Order	String	6	Identifier for the order, if any, involved in the transaction.
From Bldg	String	6	Identifier for the building losing the item.
Line No.	Numeric	4	Line number of the item on the order if an order is associated with the transaction.
Room	String	6	Number of the room losing the item.
Parent EIN	String	20	EIN of the parent item losing the item. The operator may zoom to the EIN table and choose an EIN, if it had been entered there previously. (See the EIN Entry Manager screen.)
Quantity	Floating	10.1	Number of items in the transaction.
CCR #	String	30	Identifier for the CCR authorizing the transaction.
Tt	String	15	Identifier for the trouble ticket associated with the transaction.
Operator Id	String	8	Login ID of the operator performing the transaction.
Reason Code	String	4	Code for the reason for the transaction.

## 27.9 ILM Report Menu

ILM Report Menu provides access to display and report controlled items in the database. This section of ILM is mainly used for reporting purposes. The ILM Report menu lets the users navigate to the following screens:



**Figure 27.9-1. Report Menu**

**Table 27.9-1. ILM Reports Menu options**

Menu item	Function	Section
EIN Structure reports	For printing all designated parents and components in a multi-level bill report.	27.9.1
Install/Receipt Report	For printing a report of a parent EIN configuration and send the hard copy to the receiving organization for sign off.	27.9.2
Installation Summary Report	For printing a list of EINs installed during a specified time frame	27.9.3

## 27.9.1 EIN Structure Reports

This screen is designed to retrieve and print all designated parents and components in a multi-level bill report. Table 27.9.1-1 describes the screen's fields. Table 27.9.1-2 provides instruction how to generate the report. Refer to figure 27.9.1-2 for a sample report.



**Figure 27.9.1-1. EIN Structure Reports Screen**

**Table 27.9.1-1. EIN Structure Reports Field Descriptions**

Field Name	Data Type	Size	Description
EIN or RANGE	String	20	Field can accept two 20 character strings. E.g. 00001234-00003456 for a range
NUMBER OF LEVELS TO EXPLODE	Number	2	Number of levels to display for a particular parent structure.
EXPLOSION QUANTITY	Number	2	Quantity of each EIN to reflect in the report
DATE OF BILL	Date	2	"As of" date used in selecting records from configuration history of the item
TYPE OF SORT	String	1	Null = part, S=Sort string N = Sort number
NOTE 1, NOTE 2	String	40	A 40 character note to include in the report.
EIN MULTI-LEVEL REPORT	Number	2	Number of copies of this report to generate.

**Table 27.9.1-2. Procedures to generate EIN structure reports**

PERFORM	ACTION
Navigate to EIN Structure Reports screen	From the Main Menu A. Select ILM Main Menu – press <b>'enter'</b> B. Select ILM Report Menu – press <b>'enter'</b> C. Select EIN Structure Reports – press <b>'enter'</b>
Invoke the add command	Press <b>'a'</b> to go into add mode.
Enter parameters for the report	Fill in the necessary information A. Enter EIN number or zoom to the EIN data file to pick the EIN to report. To do this, press ( <b>'/z', 't', 'F3'</b> ). B. Enter Number of levels to display C. Enter explosion quantity of each EIN to reflect in the report D. Enter the date of Bill used in selecting records E. Enter the type of sort. -null = part -'s' = sort string -'n' =sort # F. Enter any note to appeal on the report header G. Enter number of copies of the report to generate
Exit the add mode	Press <b>'F3'</b> to exit adds mode.
Execute the report	Press <b>'e'</b> to execute the report.
Report output	View the report output options: A. Enter <b>1</b> and press <b>'enter'</b> – to view the report on the screen B. Enter <b>2</b> and press <b>'enter'</b> – to save the report into a file. Enter the file name to be saved as. The file will be saved in the user's home directory. C. Enter <b>3</b> and press <b>'enter'</b> – to print the report to the defaulted printer
Navigate through the report output	A. Navigating through the report -Press <b>'n'</b> for Next -Press <b>'p'</b> for Previous -Press <b>'r'</b> for Right -Press <b>'q'</b> for Quit or -Press <b>'h'</b> to print a hardcopy of the report B. After finished making the selection, press <b>'q'</b> to exit the report screen. A message will come up specifying the number of reports generated, press <b>'enter'</b> . C. Another message will prompt "Another?" -Press <b>'y'</b> to generate more reports. This will go back to the EIN Structure Reports screen, or -Press <b>'n'</b> to go back to the ILM Report Menu.

**Remember to press <ENTER> after each field.**

(einstrep)  
 ECS Development Facility  
 EINs: 00001029  
 Explosion quantity: 1

EIN STRUCTURE REPORT

DATE: 01/05/00 TIME 15:20  
 PAGE: 1  
 Number of levels: 99  
 Date of bill: \*\*/\*\*/\*\*

-----  
 Parent EIN: 00001029 Desc: SPARCStation 20-50 SX  
 MFG Part: S20SX-50-32-P46 Desc: SPARCStation 20-50 SX  
 Active date: \*\*/\*\*/\*\* Inactive date: \*\*/\*\*/\*\*

LEVEL	EIN	MFG PART	CONTROL ITEM ID	MODEL/VERSION	QUANTITY PER	ACTIVE DATE	INACTIVE DATE
1	00000751	EXB-210TW Tape Stacker - 8 MM		210	0.0000	04/12/99	**/**/**
.2	C0003845	315570-001 BAR CODE READER/EXB-210 & 218			0.0000	04/12/99	**/**/**
.2	C0003846	872013-025 8MM Tape Drive			0.0000	04/12/99	**/**/**
.2	C0003847	EXB-303220 Terminator			0.0000	04/12/99	**/**/**
.2	C0003848	EXB-30726 Tape Cartridge - 8 MM			0.0000	04/12/99	**/**/**
.2	C0003849	EXB-307627 Cable - SCSI			0.0000	04/12/99	**/**/**
.2	C0003850	TDKP6-1200Q Tapes - 5 GB - 8 MM			0.0000	04/12/99	**/**/**
.2	C0162102	872013-025 8 MM Tape Drive - w/ Carrige Instal			0.0000	09/01/99	**/**/**
1	00001086	365-1324-01 20 Inch Color Monitor			0.0000	04/12/99	**/**/**
1	00003089	CDE-100 Yamaha External 4X Write/4X Read CD-Rom		4X	0.0000	04/12/99	**/**/**
1	00004692	X5511A 2.1 GB HD MultiPack (1 of 2 X 2.1=4.2GB)			0.0000	04/12/99	**/**/**
.2	C0021164	540-2730-03 2.1 GB HD Internal			0.0000	04/12/99	**/**/**
1	C0147699	SOL Solaris		2.4	0.0000	04/22/99	**/**/**

There are 38 components in this bill.

**Figure 27.9.1-2. EIN Structure Report**

## 27.9.2 Install/Receipt Report

This screen is designed to allow the user to print a report of a parent EIN configuration and send the hard copy to the receiving organization for sign off. Refer to Figure 27.9.2-2 for a sample report. Table 27.9.2-1 describes the screen's fields, and Table 27.9.2-2 gives the procedure on how to generate the report.



**Figure 27.9.2-1. Install/Receipt Report Screen**

**Table 27.9.2-1. Install/Receipt Report Field Descriptions**

Field Name	Data Type	Size	Description
PARENT EIN	String	20	EIN for the parent item in an EIN structure. The operator may zoom to the EIN table and choose the EIN, if it had been entered there previously. (See the EIN Entry section.)
ECS Name through Old User	Multi Fields	30	These fields reflect according to the Parent EIN entered.
INSTALL/RECEIPT REPORT	Number	2	Number of copies of this report to generate.

**Table 27.9.2-2 Procedures to generate Install/Receipt reports**

PERFORM	ACTION
Navigate to Install/Receipt Reports screen	From the Main Menu A. Select ILM Main Menu – press <b>'enter'</b> B. Select ILM Report Menu - press <b>'enter'</b> C. Select Install/Receipt Reports - press <b>'enter'</b>
Invoke the add command	Press <b>'a'</b> to go into add mode.
Enter report's parameters	Fill in the necessary information A. Enter Parent EIN or zoom to the EIN data file to select the EIN of interest. To do this, press ( <b>'z', 't', 'F3'</b> ). B. ECS Name through Old User – these fields are reflected from the Parent EIN you entered above. C. Enter number of copies for the Install/Receipt Report.
Exit the add mode	Press <b>'F3'</b> to exit add mode.
Execute the report	Press <b>'e'</b> to execute the report.
Report output	View the report output options: D. Enter <b>1</b> and press <b>'enter'</b> – to view the report on the screen E. Enter <b>2</b> and press <b>'enter'</b> – to save the report into a file. Enter the file name to be saved as. The file will be saved in the user's home directory. F. Enter <b>3</b> and press <b>'enter'</b> – to print the report to the defaulted printer
Navigate through the report output	D. Navigating through the report -Press <b>'n'</b> for Next -Press <b>'p'</b> for Previous -Press <b>'r'</b> for Right -Press <b>'q'</b> for Quit or -Press <b>'h'</b> to print a hard copy of the report E. After finished making the selection, press <b>'q'</b> to exit the report screen. A message will come up specifying the number of reports generated, press <b>'enter'</b> . F. Another message will prompt "Another?" -Press <b>'y'</b> to generate more reports. This will go back to the Install/Receipt Report screen, or -Press <b>'n'</b> to go back to the ILM Report Menu.

**Remember to press <ENTER> after each field.**

RUN DATE: 01/05/00

Page No: 1

EOSDIS  
EQUIPMENT INSTALLATION/RECEIPT REPORT  
BY ECN NUMBER

ECN NUMBER: 00002534  
DATE ON-SITE WARRANTY EXPIRES: 12/31/98  
WARRANTY END DATE: 12/31/98  
HTSC HELP CENTER PHONE: 1-800-ECS-DATA  
HTSC HELP CENTER HOURS ARE: 08:00 - 17:00 EST  
DATE RECEIVED: 05/09/97

USER CONTACT  
USER PHONE  
LOCATION: Goddard  
BUILDING # GSFC  
ROOM #: C101  
HOST NAME: g0acs03

I certify that I have received the equipment only for work associated with NASA Contract NAS5 - 60000.

Signature: \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

MFR	PRODUCT DESCRIPTION	MODEL/VERSION	PART NUMBER	SERIAL NUMBER	PART ECN	INSTALL DATE
SUN	Enterprize 3000 Enc, 4 Slot, CD 4, PWR/C		E3001	715V006C	00002534	05/27/97
WYE	Terminal		900983-07	0ICD6800046	00003256	03/13/98
WYE	Keyboard		901867-01	97030769	00006417	05/27/97
SUN	2.1 GB Internal HD		X5153A	9644628234	C0009199	08/12/99
SUN	250mhz Ultrasparc Modual		2530A	92F30203138	C0014226	05/27/97
SUN	250mhz Ultrasparc Modual		2530A	92F30202448	C0014227	05/27/97
SUN	CPU/Memory Board		2600A	5012976058254	C0014228	05/27/97
SUN	SBUS I/O Board - Enterprise Family		2610A	5014287011120	C0014229	05/27/97
SUN	CD ROM - Internal		370-2203-01	9715003781	C0014230	05/27/97
SUN	9.1 GB HD - 7200 RPM-3.5 Inch-F/W SCSI-2		540-2951-01	9707363003	C0014231	05/27/97
SUN	9.1 GB HD - 7200 RPM-3.5 Inch-F/W SCSI-2		540-2951-01	9707363312	C0014232	05/27/97
SUN	9.1 GB HD - 7200 RPM-3.5 Inch-F/W SCSI-2		540-2951-01	9715742422	C0014233	05/27/97
SUN	32 MB RAM Expansion (1 of 8X32MB=256 MB)		7022A	501265378299929	C0014234	05/27/97
SUN	32 MB RAM Expansion (1 of 8X32MB=256 MB)		7022A	501265378299923	C0014235	05/27/97
SUN	32 MB RAM Expansion (1 of 8X32MB=256 MB)		7022A	501265378299891	C0014236	05/27/97
			.			
			.			
			.			
SUN	Solaris Media for Servers	2.5.1	SOLS-C		C0150689	05/27/97

Figure 27.9.2-2. Equipment Installation/Receipt Report by ECN Number

### 27.9.3 Installation Summary Reports

This screen is designed to retrieve and print all receipts that have occurred for the designated PO, Vendor, or Date. Refer to Figure 27.9.3-2 for a sample report. Table 27.9.3-1 lists the field descriptions. Table 27.9.3-2 provides a set of procedures to generate the report.



**Figure 27.9.3-1. Installation Summary Reports Screen**

**Table 27.9.3-1. Installation Summary Reports Field Descriptions**

Field Name	Data Type	Size	Description
INSTALLATION DATE or RANGE	Date	2	Date or range of dates on which installation(s) occurred.
NOTE 1, NOTE 2	String	40	A 40 character note to include in the report.
INSTALLATION REPORTS	Number	4	Number of copies of this report to generate.

**Table 27.9.3-1. Procedures to generate installation summary reports**

PERFORM	ACTION
Navigate to Installation Summary Reports Screen	From the Main Menu A. Select ILM Main Menu – press <b>'enter'</b> B. Select ILM Report Menu - press <b>'enter'</b> C. Select Installation Summary Reports - press <b>'enter'</b>
Invoke the add command	Press <b>'/a'</b> to go into add mode.
Enter report's parameters	A. Enter the Installation date or range (i.e. 10/10/98-11/10/98). B. Enter any note to appear on the heading of the report C. Specify number of copies.
Exit the add mode	Press <b>'F3'</b> to exit the add mode.
Execute the report	Press <b>'e'</b> to execute the report.
Report output	View the report output options: G. Enter <b>1</b> and press <b>'enter'</b> – to view the report on the screen H. Enter <b>2</b> and press <b>'enter'</b> – to save the report into a file. Enter the file name to be saved as. The file will be saved in the user's home directory. I. Enter <b>3</b> and press <b>'enter'</b> – to print the report to the defaulted printer
Navigate through the report output	G. Navigating through the report -Press <b>'n'</b> for Next -Press <b>'p'</b> for Previous -Press <b>'r'</b> for Right -Press <b>'q'</b> for Quit or -Press <b>'h'</b> to print a hardcopy of the report H. After finished making the selection, press <b>'q'</b> to exit the report screen. A message will come up specifying the number of reports generated, press <b>'enter'</b> . I. Another message will prompt "Another?" -Press <b>'y'</b> to generate more reports. This will go back to the Installation Summary Report screen, or -Press <b>'n'</b> to go back to the ILM Report Menu.

**Remember to press <ENTER> after each field.**

```

(installr)
ECS Development Facility
                                INSTALLATION SUMMARY REPORT
                                Dates: 09/01/99-12/31/99
                                DATE: 01/05/00   TIME: 13:42
                                PAGE: 1

PARENT EIN: 00000343           NAME: judge
OEM PART: S20SX-50             OEM DESC: SPARCStation 20-50 SX
INSTALL DATE: 03/10/95
SITE: EDF ; ECS Development Facility
BUILDING: 1616   ROOM: 1100A4

CHILDREN INCLUDED:

EIN          OEM PART          INSTALL
=====
00000343    S20SX-50          03/10/95 EDF 1616 1100A4 Geistfeld

```

**Figure 27.9.3-2 Installation Summary Report**

## 27.10 Maintenance Menu

The ILM Maintenance Menu s screen, Figure 27.10-1, is the primary screen the LMC will utilize in order to maintain and organize maintenance related data. Table 27.10-1 describes the function of each of the menu items.



**Figure 27.10-1. Maintenance Menu Screen**

**Table 27.10-1. Maintenance Menu options**

<b>Menu item</b>	<b>Function</b>	<b>Section</b>
Work Order Entry	For entering work orders for repairs	27.10.2
Work Order Modification	For updating work orders as maintenance activity proceeds	27.10.3
Preventative Maintenance Items	For designating which items in the EIN file require preventative maintenance	27.10.4
Generate PM Orders	For generating work orders for items needing preventative maintenance	27.10.5
Work Order Parts Replacement History	For reporting items replaced under one or more work orders.	27.10.6
Maintenance Work Order Reports	For reporting about maintenance activity on selected machines	27.10.7
Work Order Status Reports	For reporting the status of work orders	27.10.8
Maintenance Codes	For defining failure codes to be used when describing repairs and replacements	27.10.9
Maintenance Contracts	For managing information about maintenance contracts with vendors and suppliers	27.10.10
Authorized Employees	For identifying employees permitted access to vendors for repair notification	27.10.11

### **27.10.1 Filling out a Maintenance Work Order (MWO)**

The Maintenance Work Order (MWO) is the term used to define the formal reporting and documentation of maintenance events. The Work Order Entry screen and the Work Order Modification screen are used to initiate and complete the MWO process. The MWO tracks corrective maintenance, preventative maintenance, configuration changes, installation maintenance, equipment relocations, and spare replacements. Table 27.10.1-1 defines the different maintenance actions. Detailed instructions on how to initiate and complete the work order are contained in Section 27.10.2 thru 27.10.3.

**Table 27.10.1-1. Types of MWO**

TYPE	CODE	DEFINITION
Corrective Maintenance	CM	Corrective Maintenance (CM) is the unscheduled repair of equipment that includes detection, diagnosis, isolation and resolution through line replaceable unit repair or replacement.
Preventative Maintenance	PM	Preventative Maintenance (PM) is planned maintenance to include routine inspections and servicing that keeps the equipment in good repair in order to prevent failure.
Configuration Change	CC	Configuration change (CC) is the change of the equipment's configuration as directed by an approved CCR.
Installation Maintenance	IM	Installation Maintenance (IM) is used for any maintenance action that occurs during the initial installation of new equipment.
Property Relocation	PR	Equipment Relocations (PR) involves the movement of equipment as a result of intra-site or inter-site relocation. In the case of inter-site relocation, the losing site is responsible for stating the MWO.
Spare Replacement	SR	Spare replacement involves the use of a pre-stocked spared part as corrective maintenance.. Only in the cases of spare use will two MWOs be created. One work order is used to account for the amount of time required to resolve the problem. A second work order is opened to account for the status of the failed component that the spare replaced. Specify the spare replacement action by entering "SR" in the "CODE" field

NOTE: The two-letter maintenance action designator is entered in the Code field of the Work Order Modification screen.

### 27.10.1.1 ECS Hardware States

ECS hardware will be in one of the following states:

- Operational – Operational hours are not tracked or reported but are determined by functional string using a formula.
- Impaired – Impaired operations exist when the system performs in less than a fully operational state due to a hardware/software malfunction. Impaired time is reportable but not chargeable as down time.

**Note: The restore time between when the vendor completes his corrective maintenance until the time the system is fully functional (i.e. disk repartitioning, software restoration) is considered impaired time.**

- Down – Down time occurs when a system is unable to perform its primary operational function due to a hardware malfunction. Down time is reportable and chargeable. Chargeable down time results only from inherent failures (i.e., no induced failures like power outages) of ECS hardware. Down time starts when the hardware problem is first recognized, and continues until the failed component is 1) repaired, 2) replaced, or 3) switched over to another system.

## 27.10.2 Work Order Entry Screen

The Work Order Entry Screen (Figure 27.10.2-1) is used to initiate the work order process. The operator will complete the required fields and upon exit from the screen, the system copies the EIN children to the parent. This screen is always presented in ADD mode.



```
wardent] WORK ORDER ENTRY:
      WORK ORDER:  RETURN for next
      PARENT EIN:
      Serial Number:
      Assn:
      EIN Part:
      EIN Desc:
      Mod/Ver:
      Building:
      Location:
      Room:
      (PARENT) TICKET #:
      NOTIFICATION DATE:
      PRIORITY:
      FAILURE DATE:
      REG/DEV:
      (CHILD) VENDOR:
      VENDOR CALL DATE:
      VENDOR CONTACT NAME:
      VENDOR REFERENCE:
      CODE:
      DATE:
      TEXT:
      NOTIFICATION TIME:
      SUBMITTER:
      FAILURE TIME:
      VENDOR:
      TIME:

ADD: [F1] help [F2] clear [F3] exit [F4] mode [F5] default
Typeover mode
```

**Figure 27.10.2-1. Work Order Entry Screen**

**Table 27.10.2-1. Work Order Entry Field Descriptions (1 of 2)**

Field Name	Data Type	Size	Description
WORK ORDER	String	10	This is the actual Work Order number. The operator should always press RETURN to obtain the next number sequentially assigned by the system.
PARENT EIN	String	20	EIN of the host that the work order is written against. Refer to Tables 27.10.2-2 and 27.10.3 to determine the EIN of the host..
Serial Number	String	30	Serial Number of the item entered as parent EIN.
Name	String	30	Name of the machine with which the item is associated.
OEM Part	String	34	Manufacturer's part number for the item entered as Parent EIN.
OEM Desc	String	30	Manufacturer's description for the item entered as Parent EIN.
Mod/Ver	String	24	Model or version of the item entered as Parent EIN.
Location	String	8	Designator for the inventory location of the item entered as Parent EIN.
Building	String	6	Building where the item entered as Parent EIN is situated.
Room	String	6	Room where the item entered as Parent EIN is located.
TROUBLE TICKET #	String	15	Identifier for the RemedyNCR trouble ticket associated with the work order
NOTIFICATION DATE	Date	2	Date the LMC is notified of the failure. The system defaults to the current date.
NOTIFICATION TIME	Time	2	Time the LMC is notified of the failure. The system defaults to the current time.
PRIORITY	String	1	Priority assigned to the work. 1 being the highest and 3 is the lowest.
SUBMITTER	String	10	Code of the employee who submitted the problem and caused the work order to be opened. The operator may zoom to the Employee table to choose the code, if it had been entered there previously. (See also ??? the Employee Manager section.)
FAILURE DATE	Date	2	The actual failure date. The earliest between the following: 1) the time the LMC is notified or 2) the time the hardware problem is first recognized.
FAILURE TIME	String	2	The actual failure time. The earliest between the following: 1) the time the LMC is notified or 2) the time the hardware problem is first recognized.
MFG/DEV	String	6	Code for the manufacturer. The operator may zoom to the Vendor table and choose the code, if it had been entered previously.
VENDOR	String	6	Code for the vendor from whom the item was purchased. The operator may zoom to the Vendor table and choose the code, if it had been entered previously.
MAINT VENDOR	String	6	Code for the item's maintenance vendor. The operator may zoom to the Vendor table and choose the code, if it had been entered previously.
VENDOR CALL DATE	Date	2	Date the vendor was called and informed of the problem.

**Table 27.10.2-1. Work Order Entry Field Descriptions (2 of 2)**

Field Name	Data Type	Size	Description
VENDOR CALL TIME	Time	2	Time the vendor was called and informed of the problem.
VENDOR CONTACT NAME	String	30	Vendor point of contact
VENDOR REFERENCE	String	20	Maintenance vendor's trouble ticket number. For advance replacement support, enter both the vendor's trouble ticket number and the RMA number.
CODE	String	2	Identifier for a type of category of the maintenance action. CM – Corrective Maintenance, PM – Preventative Maintenance, IM – Installation Maintenance, ER – Equipment Relocation, SR – Spare Replacement, and CC – Configuration Change. NOTE: The LMC only needs to enter a code if the maintenance action is something other than corrective maintenance.
NOTE	String	60	A brief description of the problem and resolution
TEXT	String	8	Press /Z at this prompt to obtain a free form text window. The operator should enter the failure / repair details in this window. When complete, press F3 to exit the text window.

### 27.10.2.1 Definition of a Host

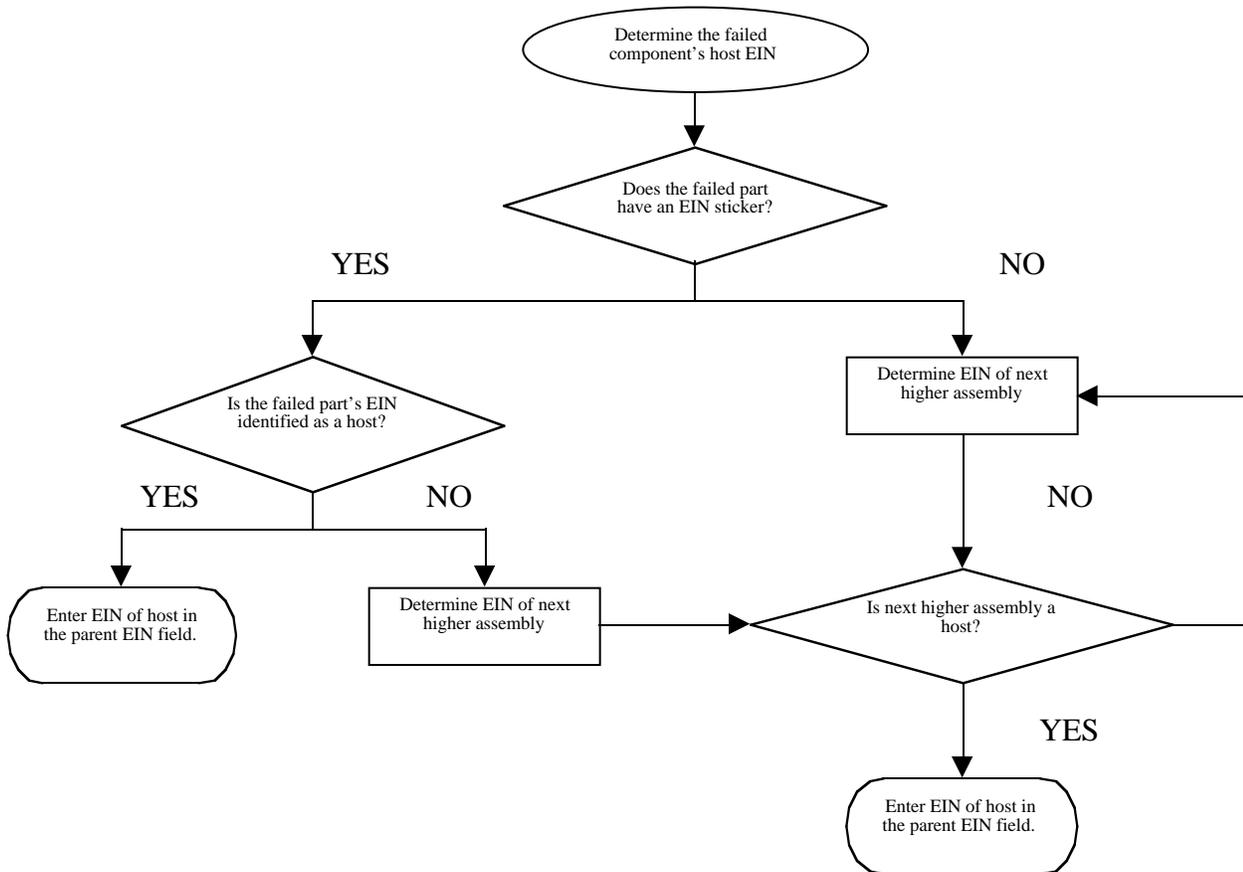
The host is the hardware platform or item that is networked attached that performs a significant function in the operation or support of ECS systems. Table 27.10.2-2 identifies the equipment that has been designated as a host.

**Table 27.10.2-2. Equipment designated as host**

HOST	NOT A HOST
Servers, D3 stackers, 8mm stackers, 4mm stackers, Routers, Hubs, FDDI Switches, Concentrators, Robots, SCSI switches, Printers, Hippi, X-terms, Raid, CDROM, DiskPaks, Unipaks, Multipaks, Fax, and Scanner	Light Pens, Wyse Terminals, Lan Analyzers, Keyboards, Monitors, Mice

### 27.10.2.2 Process for Determining EIN of Host

Figure 27.10.2-2 depicts the process for determining the EIN of the host that is entered in the Parent EIN field.



**Figure 27.10.2-2. Process for Determining the EIN of the Host**

Table 27.10.2-3 gives instructions on how to determine the next higher assembly.

**Table 27.10.2-3. Determining Next Higher Assembly**

PERFORM	ACTION
Navigate to the EIN Manager screen.	From the Main Menu A. Select ILM Main Men – press ‘Enter’ B. Select EIN Menu – press ‘Enter’ C. Select EIN Manager – press ‘Enter’
Find the component EIN	A. Press ‘f’ to invoke the find command B. Enter the 8 digit EIN number of the failed component EIN C. Press ‘F5’ to start the search
Determine the upper level assembly of the failed component	After the system found and displayed the failed component EIN record information on the screen, press ‘w’ to view the next upper level assembly.  If ILM replied, “No records available” this means that this item is not attach to any parent structure.
Exit the EIN Manager screen	Press ‘F3’ twice to get out of the EIN Manager screen.

**Table 27.10.2-4. Procedures to enter a new work order (1 of 2)**

PERFORM	ACTION
<p>Navigate to Work Order Entry screen.</p>	<p>From the Main Menu</p> <p>A. Select ILM Main Menu – press ‘enter’</p> <p>B. Select Maintenance Menu – press ‘enter’</p> <p>C. Select Work Order Entry – press ‘enter’</p>
<p>Filling out the work order</p>	<p>Fill in the necessary information</p> <p>A. Press ‘enter’ to get the next work order number.</p> <p>B. Enter Parent EIN number (EIN of the host that the work order is written against). Refer to section 27.10.2-3 for the process of determining a host EIN.</p> <p>C. Enter the applicable trouble ticket number. Entry required only if the HW problem was transferred from a Remedy trouble ticket or NCR.</p> <p>D. Enter the date and time the LMC is notified of the failure.</p> <p>E. Enter problem priority            Enter ‘1’ for any malfunction that results in down time of a production system and immediate corrective action is needed.            Enter ‘2’ for any malfunction that impairs system performance but does not result in down time; however, may result in down time if system must be brought down to fix the problem.            Enter ‘3’ for any malfunction that will not result in system down time (e.g. minor flickering screen, key sticking, sticking mouse, etc...)</p> <p>F. Enter the actual failure date and time. The earliest between the following: 1) the time the LMC is notified or 2) the time the hardware problem is first recognized.</p> <p>G. Enter date and time vendor was called and informed of the problem</p> <p>H. Enter maintenance vendor’s trouble ticket number. For advance replacement support, enter both the vendor’s trouble ticket number and the RMA number, e.g. TT# 123456 RMA # 456789</p> <p>I. Enter the appropriate maintenance code:            NOTE: Only need to enter a code if the maintenance action is something other than corrective maintenance. See table 27.10.1-1 for a more detail definition of the maintenance categories.            CM – Corrective Maintenance            PM – Preventive Maintenance            IM – Installation Maintenance            ER – Equipment Relocation            SR – Spare Replacement            CC – Configuration Change</p> <p>J. Enter a brief description of the problem.</p>

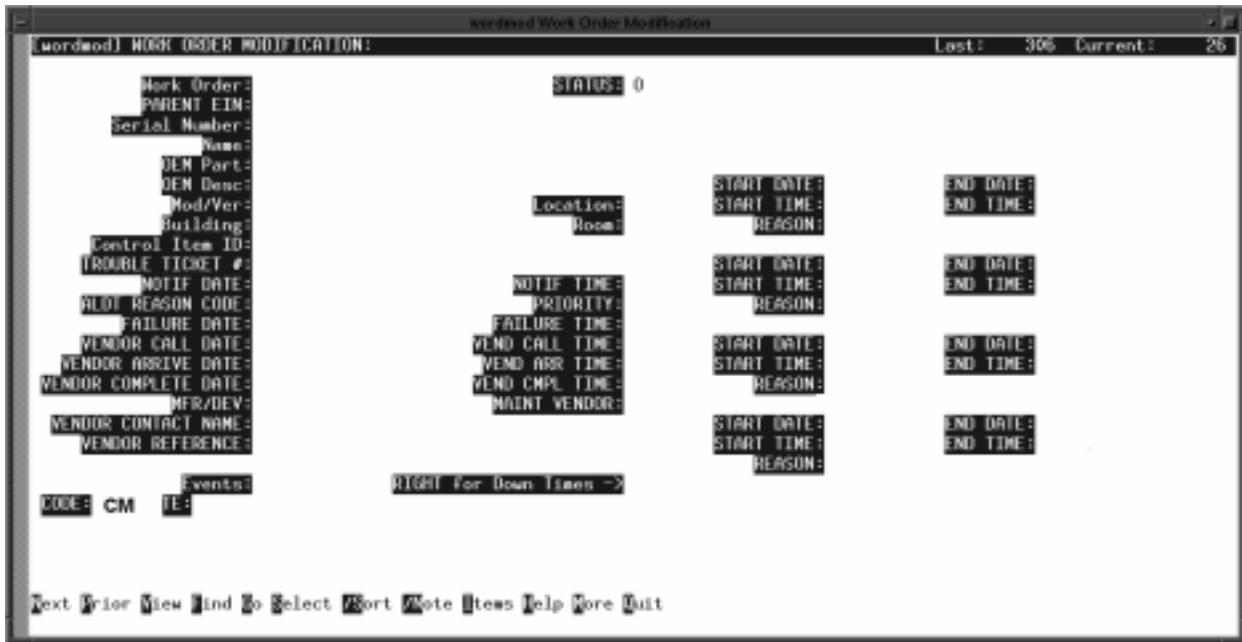
**Table 27.10.2-4. Procedures to enter a new work order (2 of 2)**

PERFORM	ACTION
Exit the add mode	Press 'F3' to get out of add mode
Copy component EINs into the work order and exit the Work Order Entry Screen	Press 'F3" again to get out of the Work order Entry screen. ILM will ask "copy in EIN children say 'y" and "n" to exit. Enter 'y' to copy in children EIN.

Remember to press <ENTER> after each field.

### 27.10.3 Work Order Modification Screens

The Work Order Modification screen, Figure 27.10.3-1, should be used when the repair has been completed and all appropriate information about the repair is known. The operator will enter or modify information in the fields as appropriate then invoke the item page to view the EIN children for the parent. The operator also has the ability with this screen to enter chargeable times. Press the 'r' key to move to the next screen to input chargeable times.



**Figure 27.10.3-1. Work Order Modification Screen**

Press RIGHT for Down Times -><-<- Press LEFT to return to main page

**Table 27.10.3-1. Work Order Modification Field Descriptions (1 of 2)**

Field Name	Data Type	Size	Description
WORK ORDER	String	10	Identifier for the work order.
STATUS	String	1	Used for determining status of the MWO. The definition for each of the status is stated below. <b>WARNING:</b> In order to ensure the integrity of the information, it is important that the LMC not update MWOs after the status has been changed to 'A' <b>O</b> – When the LMC opens the MWO. <b>A</b> – When the MWO action is completed the LMC changes the status to 'A' for the ILS Maintenance Coordinator review. <b>P</b> – After ILS Maintenance Coordinator reviewed, the status is changed to 'P'. <b>R</b> – After the ILS Property Administrator reviewed, status is changed to 'R'.
PARENT EIN	String	20	EIN of the host that the work order is written against. Refer to section 27.10.2-3 for the process of how to determine a host EIN.
Serial Number through Control Item ID	MULTI-FIELD		These fields are all reflected from the EIN file for the Parent as entered.
TROUBLE TICKET #	String	15	Identifier for the Remedy/NCR trouble ticket associated with the work order
NOTIFICATION DATE and TIME	MULTI-FIELD		Date and time the problem was reported. These fields are initialized with the current date and time but can be modified.
ALDT REASON CODE	String	10	Code to describe the delays within the maintenance process. AP – Awaiting Part UD – User Determined
PRIORITY	String	1	Priority assigned to the work. 1 being the highest and 3 is the lowest.
FAILURE DATE and TIME	MULTI-FIELD		Actual failure date and time. The earliest between the following: 1) the time the LMC is notified or 2) the time the hardware problem is first recognized.
VENDOR CALL DATE and TIME	MULTI-FIELD		Date and time the maintenance vendor was called.
VENDOR ARRIVE DATE and TIME	MULTI-FIELD		Date and time the vendor arrived to perform the repairs.
VENDOR COMPLETE DATE and TIME	MULTI-FIELD		Date and time the repair was completed whether by on-site support, advanced replacement, spare replacement, or local site personnel repairs.
MFR/DEV	String	6	Code identifying the Manufacturer or Developer ID for the specified parent EIN.
MAINT VENDOR	String	6	Code identifying the maintenance vendor for the specified parent EIN
VENDOR CONTACT NAME	String	30	Vendor point of contact

**Table 27.10.3-1. Work Order Modification Field Descriptions (2 of 2)**

Field Name	Data Type	Size	Description
VENDOR REFERENCE	String	20	Maintenance vendor's trouble ticket number. For advance replacement support, enter both the vendor's trouble ticket number and the RMA number.
CODE	String	2	Identifier for a type of category of the maintenance action. CM – Corrective Maintenance, PM – Preventative Maintenance, IM – Installation Maintenance, ER – Equipment Relocation, SR – Spare Replacement, and CC – Configuration Change. NOTE: The LMC only needs to enter a code if the maintenance action is something other than corrective maintenance.
EVENTS	String	N/A	Used to enter information relevant to the maintenance event.
NOTE	String	60	Enter a brief description of the problem and resolution.
START DATE and END DATE	MULTI-FIELD		The first block – indicate the date and time the vendor returns call. Second and third blocks – indicate delay times for when the vendor's work was suspended and resumed (include travel time, admin delays, and logistic delays). Fourth block – indicate the time between when the vendor leaves and the system is back up.
REASON	String	2	Enter the appropriate reason code for the delay entered. AP – Awaiting Part UD – User Determined

### 27.10.3.1 Chargeable Hours Page for Work Order Modification screens

This screen provides the ability to maintain chargeable hours to be used in calculations for downtime. Chargeable down time starts when the hardware problem is first recognized, and continues until the failed component is 1) repaired 2) replaced, or 3) switched over to another system..



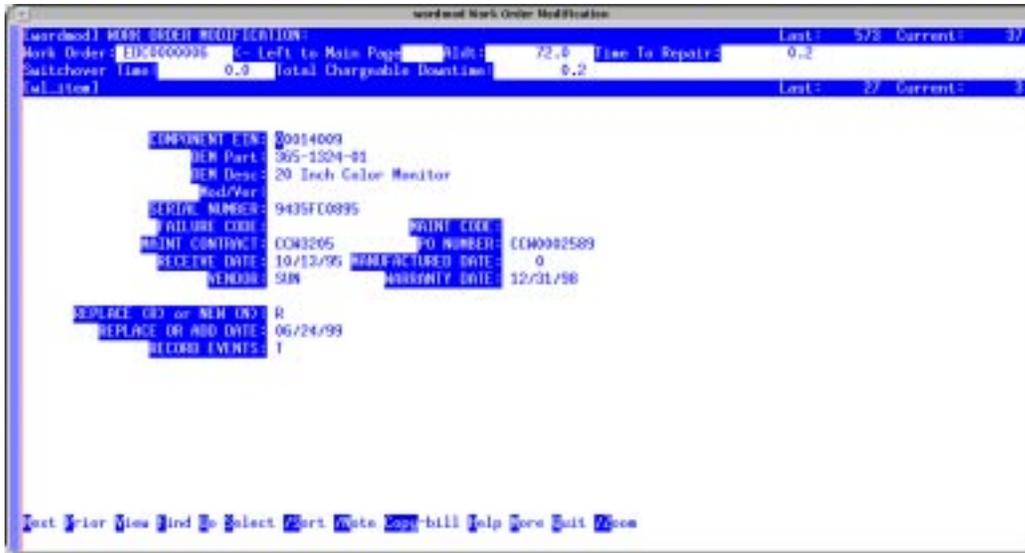
**Figure 27.10.3-2. Chargeable Hours Page for Work Order Modification Screen**

**Table 27.10.3-2. Chargeable Hours Page for Work Order Modification Screen  
Field Descriptions**

Field Name	Data Type	Size	Description
ALDT	Floating	10.1	Duration, in hours, of any administrative logistic delays.
TIME TO REPAIR	Floating	10.1	Elapsed time required for technician to complete repair and to bring item to operational status.
SWITCH OVER TIME	Floating	10.1	The time required by the system to restore its functions by switching from the downed equipment to the backup equipment. Switch over time starts at the time of the failure and ends when the fail over system is functional. Enter the total hours ( in tenths of an hour).
TOTAL CHARGEABLE DOWNTIME	Floating	10.1	Total hours to be charged for downtime. Enter the total hours (in tenths of an hour).

### 27.10.3.2 Items Page for Work Order Modification Screens

This screen provides the ability to view which items have been replaced and to enter new items. This screen should be used when the repair has been completed and all appropriate information about the repair is known. The system will ask for verification to update the database. Type 'N' for no and the database will be updated after the review by the ILS Maintenance Coordinator and ILS Property Administrator.



**Figure 27.10.3-3. Items Page for Work Order Modification Screen**

**Table 27.10.3-3. Items Page for Work Order Modification Field Descriptions**

Field Name	Data Type	Size	Description
COMPONENT EIN	String	20	This field is the component EIN number of the Parent EIN.
OEM PART through WARRANTY DATE	MULTI-FIELD		These fields are all copied from the child EIN record and may be modified in this screen as required.
REPLACE (R) or NEW (N)	String	1	An 'R' in this field for the Child EIN that had been replaced in the machine. When entering a new item, be sure to place an 'N' in this field to designate the record as being new.
RECORD EVENTS	String	40	A free form text window use to enter failure/repair details

**Table 27.10.3-4. Procedures to Complete the Work Order (1 of 2)**

PERFORM	ACTION
Navigate to Work Order Modification Screen	From the Main Menu A. Select ILM Main Menu – press ‘enter’ B. Select Maintenance Menu – press ‘enter’ C. Select Work Order Modification – press ‘enter’
Find the Work Order of interest	A. Press ‘f’ to find work order to modify B. Enter the work order number and then press ‘F5’, or press ‘v’ to go into the table view, find the particular record by placing the cursor on the line of the desired record and then press ‘v’ again to bring back to the individual form mode.
Invoke the modify command	Press ‘/m’ to go into modify mode.
Enter new information about the work order as the maintenance proceed	Fill in the necessary information A. Enter vendor arrive date and time – when the vendor technician arrived on site to perform repair. B. Enter vendor complete date and time whether by on-site support, advanced replacement, spare replacement, or local site personnel repairs. C. At the Events field - Press ‘/z’ to get access to the text box, enter the following information: old and new, part numbers, EIN, and serial number. Other appropriate notes would be any administrative logistics delay times, problems, excessive delays or problem that should be brought to the attention of the ILS office. D. Enter the appropriate maintenance code: NOTE: Only need to enter a code if the maintenance action is other than a corrective maintenance action. See Table 27.10.1-1 for a more detail definition of the maintenance categories. CM – Corrective Maintenance PM – Preventive Maintenance IM – Installation Maintenance ER – Equipment Relocation SR – Spare Replacement CC – Configuration Change E. Enter a brief description of the problem and resolution. <b>Incorrect:</b> Bad Hard drive. Replaced HD. <b>Correct:</b> System not powering up. Replaced HD F. Enter Start Date and End Date First block – indicate the time and date that the vendor returns call Second and third block – indicate delay times for when the vendor’s work was suspended and resumed (include travel time, admin delays, and logistic delays). Enter reason for the delay. AP – Awaiting Part and UD – User Determined. Fourth block – indicate the time between when the vendor leaves and the system is back up.

**Table 27.10.3-4. Procedures to complete Work Order (2 of 2)**

PERFORM	ACTION
Exit the modify mode	Press ' <b>F3</b> ' to go to the next step
Filling in the chargeable hours page	<p>A. Press '<b>r</b>' to go to the Chargeable Hours page for Work Order Modification screen.</p> <p>B. Press '<b>/m</b>' to go into modify mode</p> <p>C. Enter Switch over time (in tenths of an hour) required for switchover. Switchover time starts at the time of the failure and ends when the failover system is functional.</p> <p>D. Enter the total hours (in tenths of an hour) to be charged for down time.</p>
Exit modify mode	Press ' <b>F3</b> ' to go to the next step
Invoke the work order's item page	Press ' <b>I</b> ' to invoke the items page where the different components of the parent machine are listed.
Provide information about the failed component(s) and specify the replacement item(s)	<p>A. Look for the failed component by pressing '<b>n</b>' for next or '<b>p</b>' for previous, or do a find to find the item.</p> <p>B. Press '<b>/m</b>' to specify the failed component(s)</p> <p>C. In the record of the failed item, fill in the necessary information</p> <ul style="list-style-type: none"> <li>- Mark the failed component as failed by entering an '<b>R</b>' at the field "REPLACE (R) or NEW (N).</li> <li>- Enter replace date</li> <li>- Press '<b>/z</b>' to obtain a free form text window at the "RECORD EVENTS" field. Enter the failure/repair details in this window.</li> </ul> <p>D. When completed, press '<b>F3</b>' to exit the modify mode</p>
Exit the item page	Press ' <b>F3</b> ' again, ILM will ask if you want to process changes. Press 'n' for no. <b>WARNING:</b> Please DO NOT enter 'Y' for yes. If entered yes, the ILS Maintenance Coordinator will not be able to view and make changes to the work order.
Change the MWO status to A for the ILS Maintenance Coordinate review when the LMC completed all the work relevant to the work order	<p>At the MWO Modification screen</p> <p>A. Press '<b>/m</b>' to invoke the modify mode to change the status of the work order</p> <p>B. Enter an 'A' for audit.</p> <p>C. Press '<b>F3</b>' to exit the modify mode.</p>
Exit the Work Order Modification screen	Press ' <b>F3</b> ' to exit Work Order Modification screen.

**Remember to press <ENTER> after each field.**

#### **27.10.4 Preventative Maintenance Items Screens**

The designator of which items in the EIN file has been determined and its frequency entered by the ECS/ILS office.



**Figure 27.10.4-1. Preventative Maintenance Items Screen**

**Table 27.10.4-1. Preventative Maintenance Items Field Descriptions**

Field Name	Data Type	Size	Description
EIN through ROOM	MULTI-FIELD		These fields are not modifiable by the operator and represent the actual data from the EIN file.
SET AS PM ITEM (Y/N):	String	1	Flag designating the item is to undergo preventative maintenance. Y = Yes; N = No
FREQUENCY	Number	3	Number of days between PM.
LAST DATE	Date	2	Last date a PM has performed for this item.
MAINTENANCE DUE ON	String	8	Date the next maintenance is due.

### 27.10.5 Generate Preventative Maintenance Orders

This screen provides the ability to generate Work Orders for item needing a PM. When executed, orders are created for all items needing a PM prior to the cutoff date entered and prints a summary report of orders created.



**Figure 27.10.5-1. Generate Preventative Maintenance Orders Screen**

**Table 27.10.5-1. Generate Maintenance Orders Field Descriptions**

Field Name	Data Type	Size	Description
CUTOFF DATE	String	8	The last date for the system to examine PM items and generate orders.
NOTE 1 and NOTE 2	String	40	A 40 character note to include in the report
NUMBER OF COPIES (PM ORDERS)	String	1	Number of copies of the report to print

**Table 27.10.5-2. Procedures to generate PM orders**

STEP	ACTION
Navigate to the Generate PM Orders screen	From the Main Menu A. Select ILM Main Menu – press ‘enter’ B. Select Maintenance Menu – press ‘enter’ C. Select Generate PM Orders – press ‘enter’
Invoke the add command	Press ‘/a’ to go into add mode.
Fill in the parameters to generate the PM orders	Fill in the necessary information A. Enter the last date for the system to examine preventative maintenance items. B. Enter any note to appear on the header of the report C. Enter number of copies of the report
Exit the add mode	Press ‘F3’ to exit the add mode.
Execute the report	Press ‘e’ to execute the report.
Report output	View the report output options: A. Enter 1 and press ‘enter’– to view the report on the screen B. Enter 2 and press ‘enter’ – to save the report into a file. Enter the file name to be saved as. The file will be saved in the user’s home directory. C. Enter 3 and press ‘enter’ – to print the report to the defaulted printer
Navigate through the report output	A. Navigating through the report -Press ‘n’ for Next -Press ‘p’ for Previous -Press ‘r’ for Right -Press ‘q’ for Quit or -Press ‘h’ to print a hard copy of the report B. After finished making the selection, press ‘q’ to exit the report screen. A message will come up specifying the number of reports generated, press ‘enter’. C. Another message will prompt “Another?” -Press ‘y’ to generate more PM. This will go back to the PM Orders screen, or -Press ‘n’ to go back to the Maintenance Menu.

**Remember to press <ENTER> after each field.**

### 27.10.6 Work Order Parts Replacement History Screen

The Work Order Parts Replacement History screen (Figure 27.10.6-1) generates reports detailing parts replaced under maintenance work orders. Table 27.10.6-1 describes the screen’s fields. Table 27.10.6-2 provides the instruction to generate the report.



**Figure 27.10.6-1. Work Order Parts Replacement History Screen**

**Table 27.10.6-1. Work Order Parts Replacement History Field Descriptions**

Field Name	Data Type	Size	Entry	Description
WORK ORDER or RANGE	String	25	Required	Identifier for a work order or range of orders.
NOTE 1 and NOTE 2	String	60	Optional	A 40-character note to include in the report.
NUMBER OF COPIES (WORK ORDER HISTORY REPORT)	String	1	Required	Number of copies of the report to print

**Table 27.10.6-2. Procedures to generate Work Order Parts Replacement History Report**

STEP	ACTION
Navigate to the Work Order Parts Replacement History Report	From the Main Menu A. Select ILM Main Menu – press <b>'enter'</b> B. Select Maintenance Menu – press <b>'enter'</b> C. Select Work Order Parts Replacement History – press <b>'enter'</b>
Invoke the add command	Press <b>'/a'</b> to go into add mode.
Fill in the parameters to generate the report	Fill in the necessary information A. Enter the work order number or range of work orders to report on B. Enter any note to include in the report C. Specify number of copies of the report to generate
Exit the add mode	Press <b>'F3'</b> to exit the add mode.
Execute the report	Press <b>'e'</b> to execute the report.
Report output	View the report output options: A. Enter <b>1</b> and press <b>'enter'</b> – to view the report on the screen B. Enter <b>2</b> and press <b>'enter'</b> – to save the report into a file. Enter the file name to be saved as. The file will be saved in the user's home directory. C. Enter <b>3</b> and press <b>'enter'</b> – to print the report to the defaulted printer
Navigate through the report output	A. Navigating through the report -Press <b>'n'</b> for Next -Press <b>'p'</b> for Previous -Press <b>'r'</b> for Right -Press <b>'q'</b> for Quit or -Press <b>'h'</b> to print a hardcopy of the report B. After finished making the selection, press <b>'q'</b> to exit the report screen. A message will come up specifying the number of reports generated, press <b>'enter'</b> . C. Another message will prompt "Another?" -Press <b>'y'</b> to generate more reports. This will go back to the Work Order Parts Replacement History screen, or -Press <b>'n'</b> to go back to the Maintenance Menu.

**Remember to press <ENTER> after each field.**

### 27.10.7 Maintenance Work Order Reports Screens

This screen provides Work Order Reports for work done on selected machines. Table 27.10.7-1 describes the screen's fields.



**Figure 27.10.7-1. Maintenance Work Order Reports Screen**

**Table 27.10.7-1. Maintenance Work Order Reports Field Descriptions**

Field Name	Data Type	Size	Description
PARENT EIN	String	20	Parent EIN for the installation/structure.
OEM PART	String	34	OEM part number reflected from the EIN record of the child.
SERIAL NUMBER	String	30	Serial number of the parent EIN.
SITE (LOCATION)	String	6	Code for the site which the items can be found.
NOTE 1	String	40	A 40 character message to include in the report
ENTER NUMBER OF COPIES (Maintenance Work Order Reports)	Number	1	Number of copies of the report to print.

**Table 27.10.7-2. Procedures to generate Maintenance Work Order Reports**

PERFORM	ACTION
Navigate to the Maintenance Work Order Reports screen	From the Main Menu A. Select ILM Main Menu – press <b>'enter'</b> B. Select Maintenance Menu – press <b>'enter'</b> C. Select Maintenance Work Order Reports – press <b>'enter'</b>
Invoke the add command	Press <b>'/a'</b> to go into add mode.
Enter the report parameters	Fill in the necessary information A. Enter the Parent EIN number, or you may press <b>'/z'</b> , choose the EIN from the list by pressing <b>'t'</b> , then press <b>'F3'</b> . B. Enter any note to appeal on the header of the report C. Enter number of copies of the report to print.
Exit the add mode	Press <b>'F3'</b> to exit the add mode.
Execute the report	Press <b>'e'</b> to execute the report.
Report output	View the report output options: A. Enter <b>1</b> and press <b>'enter'</b> – to view the report on the screen B. Enter <b>2</b> and press <b>'enter'</b> – to save the report into a file. Enter the file name to be saved as. The file will be saved in the user's home directory. C. Enter <b>3</b> and press <b>'enter'</b> – to print the report to the defaulted printer
Navigate through the report output	A. Navigating through the report -Press <b>'n'</b> for Next -Press <b>'p'</b> for Previous -Press <b>'r'</b> for Right -Press <b>'q'</b> for Quit or -Press <b>'h'</b> to print a hard copy of the report B. After finished making the selection, press <b>'q'</b> to exit the report screen. A message will come up specifying the number of reports generated, press <b>'enter'</b> . C. Another message will prompt "Another?" -Press <b>'y'</b> to generate more reports. This will go back to the Maintenance Work Order Reports screen, or -Press <b>'n'</b> to go back to the Maintenance Menu.

**Remember to press <ENTER> after each field.**

### 27.10.8 Work Order Status Reports Screens

This screen provides status reports on selected Work Orders. Table 27.10.8-1 describes the screen's fields.



**Figure 27.10.8-1. Work Order Status Reports Screen**

**Table 27.10.8-1. Work Order Status Reports Field Descriptions**

Field Name	Data Type	Size	Description
WORK ORDER or RANGE	String	25	Identifier for a work order or a range of work orders. The operator may zoom to the Work Order file to choose an identifier, if it had been entered there previously. (See the Work Order Entry section.)
PART (OEM PART NUMBER) or RANGE	String	34	Manufacturer's part number or a range of numbers for items. The operator may zoom to the OEM Part file to choose the part number, if it had been entered there previously.
ORDER STATUS [ FRCX ] (STATUS)	String	2	Code for the status of a work order
NOTE 1, NOTE 2	String	40	A 40 character message to include in the report
ENTER NUMBER OF COPIES (Work Order Status)	Number	1	Number of copies of the report to print.

**Table 27.10.8-2. Procedure to generate Maintenance Work Order Reports**

PERFORM	ACTION
Navigate to the Work Order Status Reports Screen	From the Main Menu A. Select ILM Main Menu – press <b>'enter'</b> B. Select Maintenance Menu – press <b>'enter'</b> C. Select Work Order Status Reports – press <b>'enter'</b>
Invoke the add command	Press <b>'/a'</b> to go into add mode.
Enter the report parameters	Fill in the necessary information. Fill in selection criteria for the other fields as required. A. Enter the Work order number, or you may press <b>'/z'</b> , choose the work order from the list by pressing <b>'t'</b> , then press <b>'F3'</b> . B. Enter the child OEM part number or press <b>'/z'</b> , choose the OEM Part from the list by pressing <b>'t'</b> , then press <b>'F3'</b> . C. Enter order status 'O' – when the order is first entered 'A' – when the order is being reviewed by the ILS MC. 'P' - when the order is being reviewed by the ILS PA. 'R' – when the order is closed. D. Enter any note to appeal on the header of the report E. Enter number of copies of the report to print.
Exit the add mode	Press <b>'F3'</b> to exit the add mode.
Execute the report	Press <b>'e'</b> to execute the report.
Report output	View the report output options: A. Enter <b>1</b> and press <b>'enter'</b> – to view the report on the screen B. Enter <b>2</b> and press <b>'enter'</b> – to save the report into a file. Enter the file name to be saved as. The file will be saved in the user's home directory. C. Enter <b>3</b> and press <b>'enter'</b> – to print the report to the defaulted printer
Navigate through the report output	A. Navigating through the report -Press <b>'n'</b> for Next -Press <b>'p'</b> for Previous -Press <b>'r'</b> for Right -Press <b>'q'</b> for Quit or -Press <b>'h'</b> to print a hard copy of the report B. After finished making the selection, press <b>'q'</b> to exit the report screen. A message will come up specifying the number of reports generated, press <b>'enter'</b> . C. Another message will prompt "Another?" -Press <b>'y'</b> to generate more reports. This will go back to the Maintenance Work Order Reports screen, or -Press <b>'n'</b> to go back to the Maintenance Menu.

**Remember to press <ENTER> after each field.**

## 27.10.9 Maintenance Codes Screens

This screen provides failure codes and descriptions for use with repairs and replacements. Table 27.10.9-1 describes the screen's fields.



**Figure 27.10.9-1. Maintenance Codes Screen**

**Table 27.10.9-1. Maintenance Codes Field Descriptions**

Field Name	Data Type	Size	Description
CODE (maintenance)	String	2	Code that distinguishes among item failures according to their cause
DESC (maintenance)	String	30	Description for the failure code.

## 27.10.10 Maintenance Contracts Screens

This screen provides contract numbers for repair contracts with vendors and suppliers. Table 27.10.10-1 describes the screen's fields.



**Figure 27.10.10-1. Maintenance Contracts Screen**

**Table 27.10.10-2. Maintenance Contracts Field Descriptions**

Field Name	Data Type	Size	Description
CONTRACT ID	String	15	Identifier for the maintenance contract as assigned by purchasing or provided by the vendor
VENDOR	String	6	Vendor code whom the item was purchased from.
START DATE	Date	2	Date the contract is to become effective.
END DATE	Date	2	Date the contract will expire.
PO NUMBER	String	10	Identifier for the purchase order under which maintenance was procured.
PIN	String	20	PIN number applicable for authorization for vendor contact.

### 27.10.11 Authorized Employees Screens

This screen provides employee codes for employees who have been permitted access to the vendor for repair notification. Table 27.10.11-1 describes the screen's fields.



**Figure 27.10.11-1. Authorized Employees Screen**

**Table 27.10.11-1. Authorized Employees Field Descriptions**

Field Name	Data Type	Size	Description
EMPL	String	10	Identifier for an employee. The operator may zoom to the Employee table and choose the code, if it had been entered there previously. (See the Employee Manager section.)
CONTRACT NO	String	10	Identifier for a maintenance contract. . The operator may zoom to the Maintenance Contracts table and choose the identifier, if it had been entered there previously. (See the Maintenance Contracts Manager section.)
VENDOR	String	6	Code for the vendor with whom the contract is placed. The operator may zoom to the Vendor table and choose the code, if it had been entered there previously. (See the Vendor Master Maintenance section.
Last Name	String	30	Last name of the employee. The value is obtained from the Employee table.

## 27.11 ILM Master Menu

The ILM Master Menu provides the LMC with the ability to verify the accuracy of ILM in reference to employee information, inventory location, hardware and software codes. All additions, deletions or modifications are to be directed to the ILS Property Administrator.



**Figure 27.11-1. ILM Master Menu**

The ILM Master menu is broken down into the following functions:

**Table 27.11-1. ILM Master Menu options (1 of 2)**

Menu item	Function	Section
Employee Manager	For maintaining employee information	27.11.1
System Parameters Manager	For creating parent/child relationship between components in an assembly	27.11.2
Inventory Location Manager	For maintaining standardized information about ECS inventory locations for all ILM processes.	27.11.3
Hardware/Software Codes	For maintaining a standard set of codes for classifying inventory items according to type.	27.11.4
Status Code Manager	For maintaining a standard set of codes for classifying inventory items according to status.	27.11.5
DAAC Export Inventory Data	For exporting a DAAC's inventory data and transferring them to the SMC's ILM system.	27.11.6
Transaction Log	For reviewing events records from XRP-II's system transaction log.	See 27.12.3
Transaction Archive	For archiving records from XRP-II's system transaction log.	See 27.12.4
ILM Import Records	For uploading inventory data that had been exported at another site.	27.11.7
Site Codes for Scanned Data	For maintaining a standard set of codes for uniquely identifying an ECS site and building.	27.11.8

**Table 27.11-1. ILM Master Menu options (2 of 2)**

Menu item	Function	Section
Scanned Data	For reviewing and editing bar code scanner data prior to updating property records.	27.11.9
Process Scanned Data	For updating inventory records using bar code scanner data.	27.11.10

### 27.11.1 Employee Manager Screens

This screen provides for the maintenance of employee information. Table 27.11.1-1 describes the screen's fields.



**Figure 27.11.1-1. Employee Manager Screen**

**Table 27.11.1-1. Employee Manager Field Descriptions**

Field Name	Data Type	Size	Description
EMPLOYEE NUMBER (EMPL)	String	10	Unique identifier for an employee.
LAST NAME (EMPLOYEE)	String	30	Last name of the employee.
FIRST NAME (EMPLOYEE)	String	30	First name of the employee.
STATUS (EMPLOYEE)	String	1	Status of the employee.
WORK CENTER (EMPLOYEE)	String	6	Code for work center where the employee is normally assigned. The operator may zoom to the Inventory Locations file to choose the code for the work center-type location, if it had been entered there previously. (See the Inventory Location Manager section.)
PHONE (EMPLOYEE)	String	18	Telephone number of the employee.
FAX NUMBER (EMPLOYEE)	String	13	FAX number of the employee.
E-MAIL (EMPLOYEE)	String	30	E-mail address for the employee.
PAGER NUMBER (EMPLOYEE)	String	13	Pager number for the employee.
CC MAIL (EMPLOYEE)	String	30	CC-mail address of the employee.

### 27.11.2 System Parameters Manager Screen

The System Parameters Manager screen (Figure 27.11.2-1) is for maintaining system-wide XRP-II parameters and is principally used when first installing the system. Since ILM uses only a subset of the full XRP-II capabilities, this is a scaled down version of the screen described in the Section 6 of the *XRP-II System Reference Manual*. It contains only the fields needed to tailor the system to the site at which it operates.

Several fields have particular significance for ILM. The Site ID field contains the code for the ECS site where the operator's copy of XRP-II is installed. The field is interrogated by ILM processes that have to determine which assets belong to the local site. The Last EIN field is used by XRP-II to keep track of the most recently used, automatically assigned EIN. It updates the field whenever an operator presses <RETURN> in the EIN field when creating records via EIN Entry. The NASA Contract Number and Default MFG Year fields contain values used as defaults when creating ILM records, and the Export Functioning field precludes more than one export process from running at a time because they would conflict.

Table 27.11.2-1 describes each of the screen's fields.



**Figure 27.11.2-1. System Parameters Manager CHUI**

**Table 27.11.2-1. System Parameters Manager Field Descriptions**

Field Name	Data Type	Size	Description
SYSTEM PARAMETER KEY	String	1	Code that designates the active record in XRP-II's system parameter table. The active record must have the value "A".
SITE ID	String	6	Code that identifies the ECS site where this XRP-II system is installed.
LAST CONTROL ITEM ID	String	20	Code used in determining the next sequentially available identifier when assigning control item identifiers automatically.
LAST EIN	String	20	Code used in determining the next sequentially-available identifier when assigning EIN numbers automatically
USE BRANCH AS ORDER PREFIX	String	1	Code that, if "Y", causes all new purchase orders, work orders, and sale orders to be prefixed with the site code of the operator or, if null, the default site code.
starting RAM	Number	8	Initial amount of memory XRP-II is to use
NASA CONTRACT NUMBER	String	11	Code that is used by NASA to identify the ECS contract. It is attached to all property records
DEFAULT MFG YEAR	String	4	Year used as default to identify when an item was built.
EXPORT FUNCTIONING	String	1	Code that indicates if an XRP-II data "export" function is in progress; used to prevent multiple export routines being run concurrently

### 27.11.3 Inventory Location Manager Screens

This screen provides for the maintenance of location information used in the inventory and logistics processes. Table 27.11.3-1 describes the screen's fields.



**Figure 27.11.3-1. Inventory Location Manager Screen**

**Table 27.11.3-1. Inventory Location Manager Field Descriptions (1 of 2)**

Field Name	Data Type	Size	Description
MATERIAL LOCATION ID	String	6	ID for the location where material can be found.
DESCRIPTION (Material Location)	String	30	Text description of the utility of the site.
LOCATION TYPE (Material Location)	String	1	Code that specifies the material application at the site: Null or S = stock, R = received, N = non-nettable, W = work center, A = archive.
SITE (LOCATION)	String	6	Code for the ECS site hosting the inventory location.
SHIPPING REPORT NUMBER	Number	2	Report number assigned to this item when the item was shipped.
SHIPPING REPORT ALPHA	String	2	Shipping report code associating an alpha code to a numeric site code. See Shipment Numbers by Site screen (shipno).
CONSIGNEE NAME	String	30	Name of individual/office responsible for material at the site.
ADDRESS 1 (Consignee)	String	30	First part of address

**Table 27.11.3-1. Inventory Location Manager Field Descriptions (2 of 2)**

Field Name	Data Type	Size	Description
ADDRESS 2 (Consignee)	String	30	Second part of address.
CITY	String	20	City part of address
STATE	String	2	State 2 character abbreviation of address.
ZIP	String	10	Zip code of address.
PHONE	String	18	Telephone number of address

#### 27.11.4 Hardware/Software Codes Screens

This screen provides the maintenance of the codes used to identify maintenance cost source information in the inventory and logistics processes. Table 27.11.4-1 describes the screen's fields.



**Figure 27.11.4-1. Hardware/Software Codes Screen**

**Table 27.11.4-1. Hardware/Software Codes Field Descriptions**

Field Name	Data Type	Size	Description
CODE (Hardware/Software)	String	10	Code for classifying the type of items.
DESCRIPTION (Hardware/Software)	String	30	Description for the hardware/software code

### 27.11.5 Status Code Manager Screen

The Status Code Manager screen (Figure 27.11.5-1) maintains a set of standardized status codes for tracking property and events in the inventory and logistics processes. Table 27.11.5-1 describes the screen's fields.



**Figure 27.11.5-1. Status Code Manager CHUI**

**Table 27.11.5-1. Status Code Manager Field Descriptions**

Field Name	Data Type	Size	Description
CODE	String	4	Code for an inventory status for an item.
DESCRIPTION	String	30	Description for the code.

### 27.11.6 DAAC Export Inventory Data Screen

ILM at the SMC can maintain consolidated records about inventory, logistics, and maintenance activities system-wide. Records created at local sites can be exported and shipped to the SMC where they can be added to records that were centrally created. For ECS, only records about items at the site are to be exported.

**NOTE:** ILM data import and export are now automated. The cron jobs are run daily at SMC and all the DAACs. LMCs do not need to invoke this process. The information providing here is just for the operator reference only.

The DAAC Export Inventory Data utility supports this customized export process. It generates a formatted data file containing site records changed but not previously exported, and optionally transfers the file via ftp to a machine at the SMC.

The screen in Figure 27.11.6-1 initiates the export process. XRP-II analyzes the transaction log to determine what data changed since the last time the function was used and which site items were affected. EIN, EIN structure, purchase order, work order, inventory and transaction history records are copied and stored in files compatible with XRP-II's ILM Import Records utility. These files are, in turn, archived in a tar file. The tar file is given a name that identifies the date and time the export was done, the origination site, the file's type, and the machine to which the file is to be sent. If the SEND NOW feature is used, XRP-II transfers the files via ftp then moves them from the export directory to an archive directory. Otherwise, the files remain in the export directory to be transferred manually.

**Note:** Export files that are transferred manually to a destination machine must also be moved manually to the export archive directory.

**Note:** The export directory and its corresponding export archive directory are configuration parameters named via program environment variables set in the XRP-II configuration files during installation.

Table 27.11.6-1 describes the screen's fields.



**Figure 27.11.6-1. DAAC Export Inventory CHUI**

**Table 27.11.6-1. DAAC Export Inventory Data Field Descriptions**

Field Name	Data Type	Size	Description
FIRST MACHINE TO SEND TO	String	40	Full domain name or IP address of the machine to receive the exported inventory data.
SEND NOW	String	1	Flag to indicate if the export tar file is to be sent now.

### 27.11.7 ILM Import Records Screen

ILM data will be exchanged among ECS sites on a routine basis. The ILM Import Records utility is designed to load data from tar files that had been created and forwarded using either of ILM data export utilities (see Sections 27.11.7).

The screen shown in Figure 27.11.7-1 initiates the import process. Entering “Y” at the prompt causes XRP-II to process all files in the directory named in the IMPORTPATH environment variable. Import tar files -- whose names indicate the date and time they were made -- are processed in chronological order as determined from their file names. Upon completion, the original files are moved to an archive directory named in the IMPORTARC environment variable.

**NOTE:** ILM data import and export are now automated. The cron jobs are run daily at SMC and all the DAACs. LMCs do not need to invoke this process. The information providing here is just for the operator reference only.



**Figure 27.11.7-1. ILM Import Records CHUI**

### 27.11.8 Site Codes for Scanned Data Screen

This screen (Figure 27.11.8-1) allows operators to maintain a set of standard codes and descriptions for identifying ECS sites and buildings. Each code represents one site/building pair. They are used to decipher location codes used in bar code scanner data imported into ILM. Table 27.11.8-1 describes the screen's fields.



**Figure 27.11.8-1. Site Codes for Scanned Data CHUI**

**Table 27.11.8-1. Site Codes for Scanned Data Field Descriptions**

Field Name	Data Type	Size	Description
CODE	Numeric	4	Code assigned to a Site and Building
SITE	String	6	Code for an ECS site. The operator may zoom to the Site Master file to choose the code, if it had been entered there previously. (See the Site Master Manager section.)
BUILDING	String	6	Identifier for the building where an item can be found.
DESC	String	40	Description of the Site/Bldg combination.

### 27.11.9 Scanned Data Screen

The Scanned Data screen (Figure 27.11.9-1) presents a set of bar code scanner data that had been loaded into ILM but not yet processed. It allows operators to review and edit scanned data that has been pre-processed and to create additional data if desired. Records are typically imported using ILM's scan data processing function, which also deletes them after they have been processed successfully. Table 27.11.9-1 describes the screen's fields.



However, the database remains unchanged for EINs that still have product structure discrepancies and for those that have not yet been added to ILM.

Table 27.11.10-1 describes this screen's fields.



**Figure 27.11.10-1. Process Scanned Data CHUI**

**Table 27.11.10-1. Process Scanned Data Field Descriptions (1 of 2)**

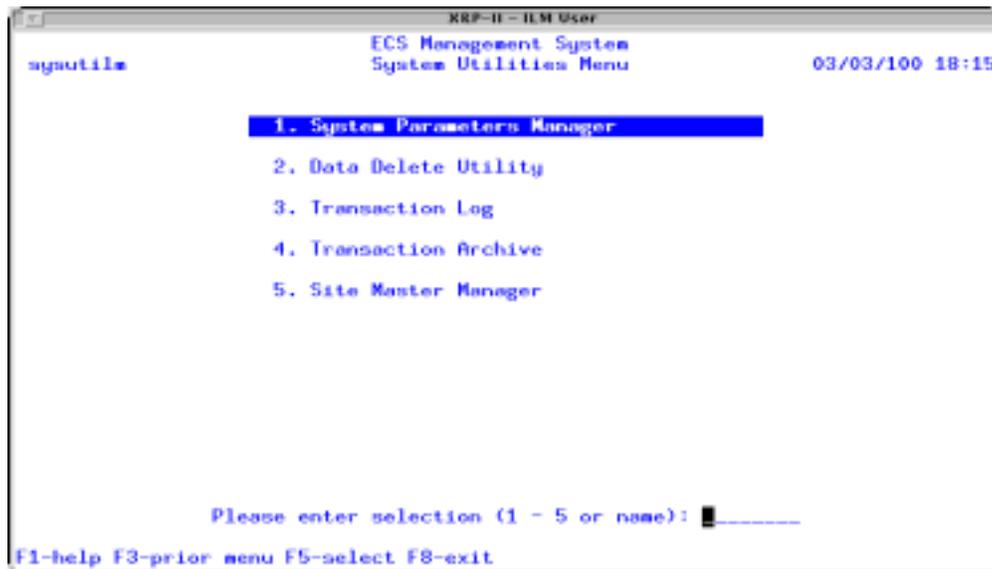
Field Name	Data Type	Size	Description
CLEAR DATA FILE (Y/N)	String	1	Flag designating whether or not to clear previously loaded scanned data records before starting the pre-processing or processing activity.
LOAD SCANNED DATA (Y/N)	String	1	Flag designating if scanned data should be (re)loaded from the named file before starting the pre-processing or processing activity.
FILE NAME	String	40	Name of the file containing the bar code scan data to be imported
RESET STATUS (Y/N)	String	1	Flag designating if processing status flags that may have been previously set in loaded data records should be reset before starting the pre-processing or processing activity. Set to Y before preprocessing
PREPROCESS RECORDS (Y/N)	String	1	Flag designating whether or not to compare scanned data to existing inventory records before updating the databbase.
ELIMINATE DUPLICATES (Y/N)	String	1	Flag designating if duplicate records are to be eliminated from scanned data. Applies to pre-processing only.
REPORT MISSING CHILDREN (Y/N)	String	1	Flag designating whether or not to report child EINs not found in the scanned data. Applies to pre-processing only.

**Table 27.11.10-1. Process Scanned Data Field Descriptions (2 of 2)**

Field Name	Data Type	Size	Description
REPORT VALID RECORDS (Y/N)	String	1	Flag designating whether or not to report records found to be valid in the scanned data file. Applies to pre-processing only.
REPORT MISSING PARENTS (Y/N)	String	1	Flag designating whether or not to report "top-level" EINs not found in the scanned data. Applies to pre-processing only.
PROCESS RECORDS (Y/N)	String	1	Flag designating whether or not to update location information in the database based on the scanned data.
CLEAR DATA REPORT	Numeric	2	Number of copies of "CLEAR DATA FILE" report desired.
LOAD DATA REPORT	Numeric	2	Number of copies of "LOAD DATA FILE" report desired.
RESET DATA REPORT FILE	Numeric	2	Number of copies of "RESET DATA FILE" report desired.
PREPROCESS DATA REPORT	Numeric	2	Number of copies of "PREPROCESS RECORDS" report desired.
PROCESS DATA REPORT	Numeric	2	Number of copies of "PROCESS RECORDS" report desired.

## 27.12 System Utilities Menu (Perform XRP-II Master File Maintenance)

XRP-II groups together several programs that help standardize values for all of XRP-II and support inter-site exchange of ILM data. The screens supporting these programs are accessed via the System Utilities menu (Figure 27.12-1).



**Figure 27.12-1. System Utilities Menu Screen**

The System Utilities menu is broken down into the following functions:

**Table 27.12-1. System Utilities Menu options**

Menu item	Function	Section
System Parameters Manager	For maintaining system-wide parameters	27.12.1
Data Delete Utility	For deleting unwanted records in the database	27.12.2
Transaction Log	For logging the database transactions	27.12.3
Transaction Archive	For archiving old database transactions	27.12.4
Site Master Manager	For maintaining a list of the ECS related sites	27.12.5

### 27.12.1 System Parameters Manager Screen

The screen shown in Figure 27.12.1-1 maintains system-wide, XRP-II parameters and is principally used when first installing the system. Since ILM uses only a subset of the full XRP-II capabilities, this is a scaled down version of the screen described in Section 6 of the *XRP-II System Reference Manual*. It contains only the fields needed to tailor the system to the site at which it operates.



**Figure 27.12.1-1. System Parameters Manager CHUI**

The system parameter key is the key field of the system parameter file. The value “A” designates the active record, which is set when the database is created.

**Note:** An active record must always be present in order for XRP-II to function.

In the site identifier field, enter the code for the ECS site where the copy of XRP-II that the operator is using is installed. This data is used primarily in report headers and file names that XRP-II creates.

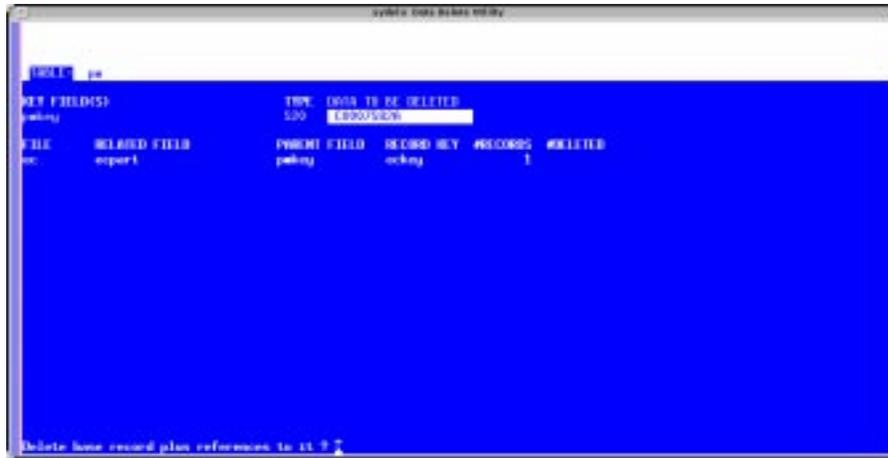
**Note:** The site identifier field must have an entry in order for ILM’s data export processing to work properly.

**Table 27.12.1-1. System Parameters Manager Field Descriptions**

Field Name	Data Type	Size	Description
System parameter key	string	1	Code that designates the active record in XRP-II’s system parameter table
Site id	string	6	Code that identifies an ECS site
Last control item id	string	20	Code used in determining the next sequentially-available identifier when assigning control item identifiers automatically
Last ein	string	20	Code used in determining the next sequentially-available identifier when assigning ein numbers automatically
Use branch as order prefix	string	1	Code that, if “Y”, causes all purchase orders, work orders, and sale orders to be prefixed with the site code of the user or, if null, the default site code
Starting RAM	numeric	8	Initial amount of memory XRP-II is to use
NASA contract number	string	60	Code that is used by NASA to identify the ECS contract and is attached to all property records
Default mfg year	numeric	4	Year used as default to identify when an item was built
Export functioning	string	1	Code that indicates if an XRP-II data “export” function is in progress; used to prevent multiple export routines being run concurrently

### 27.12.2 Data Delete Utility

Data Delete Utility enables the deletion of arbitrary types of data that are no longer wanted in the database. Access to this screen should be restricted to the System administrator. In a relational database with referential integrity it is not possible to delete a record in a database table that is referenced by a record in some other table. Data delete utility enables the user to specify a table and key value, then it identifies on the screen the data related to the specified data, and optionally allows the user to delete the related data and the base record.



**Figure 27.12.2-1. Data Delete Utility Screen**

**Table 27.12.2-1. Procedure to delete base records in the database**

PERFORM	ACTION
Navigate to the Data Delete Utility screen	From the Main Menu A. Select System Utilities Menu – press ‘enter’ B. Select Data Delete Utility – press ‘enter’
Enter data to be deleted	A. Enter the table name of a database table at the “Table:” prompt. XRP responds by listing the one or more fields which form the key of the file. B. Then enter the key value identifying the base record to be deleted. C. XRP specifies the number of record selected based on the key value the user entered. Press ‘enter’ to go to the next step. D. XRP prompts “ <b>DELETE MODE: Confirm Silent or Quit?</b> ” <b>Confirm</b> – Type ‘C’ to select confirm. XRP identifies and lists on the screen all of the tables in the database have one or more records referencing the base record. If the user confirms that the data is to be deleted, XRP deletes all of the related records and then the base record. The number of records deleted from each table is echoed to the screen. <b>Silent</b> – XRP will delete all the base records silently without asking the user to confirm the deletion. <b>Quit</b> – to exit out of the delete mode.
Exit the screen	Press ‘F3’ to exit Data Delete Utility screen.

### 27.12.3 Transaction Log Screen

The screen shown in Figure 27.12.3-1 allows operators to browse, and maintain if necessary, the database transaction log file. Values for all fields on this screen are system-supplied. When a

database record is modified via a data entry screen, the system provides the next available transaction number and record information about what field was modified when and by whom.

The transaction log facilitates synchronizing database changes among sites. For example, the Export Site-Unique Changes utility (Section 27.11.6) analyzes the log's entries to identify database records that have been modified, setting each Transferred field so it bypasses the entry next time the utility is run.



**Figure 27.12.3-1. Transaction Log CHUI**

The screen displays numbers to identify XRP-II database fields because field names are not stored in the database. Field names that correspond to the numbers can be found in file \$MSPATH/mms/def/file.h, where MSPATH is an environment variable identifying XRP-II's installation directory.

Similarly, the screen uses numbers to identify locations of altered database records. The current contents of a referenced record can be displayed as follows, but only if the record at that location was neither deleted nor replaced by another since the log entry was made. At a Unix command line prompt, type:

<b>SYS920</b>	Invokes UNIFY's database test driver
<b>setloc &lt;table&gt; &lt;location&gt;</b>	Displays a record's data
<b>end</b>	Exits program SYS920

**Note:** Use Transaction Archive (Section 27.12.4) to remove obsolete transaction records. Transaction Archive preserves records that export utilities still need, and it saves a historical copy of the records it deletes.

Table 27.12.3-1 describes this screen's fields.

**Table 27.12.3-1. Transaction Log Field Descriptions**

Field Name	Data Type	Size	Description
transaction key	numeric	5	Number that uniquely identifies each update transaction
field number	numeric	8	Numerical identifier for the XRP-II field affected by the transaction.
table name	string	10	Name of the XRP-II table affected by the update transaction
operator id	string	8	Userid of the operator making the update transaction
date	date	N/A	Date of the update transaction
time	time	N/A	Time of the update transaction
transaction type	string	1	Code for the type of transaction: A (add), M (modify), or D (delete)
transferred	string	1	Code that indicates that the transaction has been analyzed by an export utility. "T" means the corresponding control item record has been exported, while "X" means it did not need to be exported.
record location	numeric	8	Identifier for the relative record within the XRP-II table affected by the update transaction
ilm	string	1	Code that distinguishes between ILM-and BLM-related log entries; "Y" signifies ILM

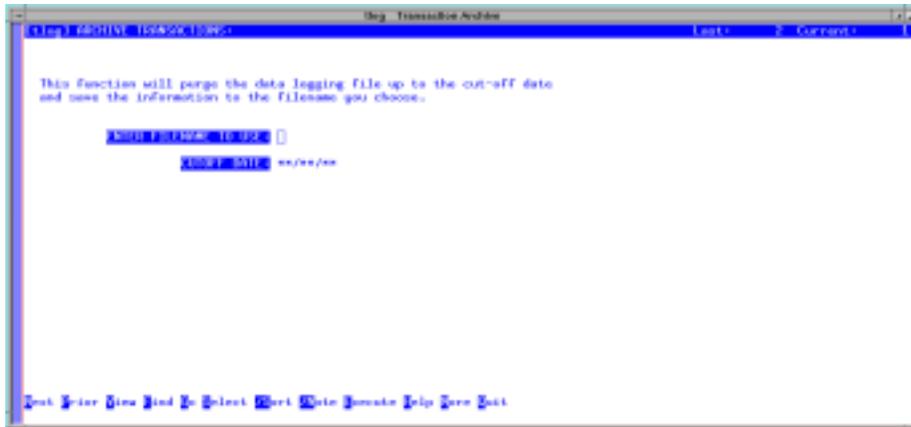
#### 27.12.4 Transaction Archive Screen

Control item data update transactions should periodically be deleted from the database after changed records have been exported. This makes room to log new transactions.

The Transaction Archive screen shown in Figure 27.12.4-1 copies to a named file the records of transactions that occurred on or prior to a specified cutoff date. It then deletes the records from the database.

Specify the date of the last transaction to archive and the name of a file in which to store the data.

**Note:** XRP-II will only archive a transaction log record if its Transferred field contains the value "T" or "X". The presence of a "T" or "X" means the record has been analyzed by a program for exporting records about control item changes to other sites (see Sections 27.11.6). Deleting unanalyzed transaction log records can cause incomplete data exchanges.



**Figure 27.12.4-1. Transaction Archive CHUI**

**Table 27.12.4-1. Transaction Archive CHUI Field Descriptions**

Field Name	Data Type	Size	Description
file name	string	8	Name of the file in which to store transaction records being archived
cutoff date	date	N/A	Date of the most recent transaction to be archived

### 27.12.5 Site Master Manager Screen

The Site Master Manager screen (Figure 27.12.5-1) lets operators maintain an index of ECS-related sites. This index, which identifies details about each site, also serves as a pick list to facilitate entering control item implementation status data and report generation parameters on other screens. This screen is identical to the Branch Master Maintenance screen described in Section 6.8 of the *XRP-II System Reference Manual*, except that the term “site” is used in lieu of “branch” and the tax code field has been deleted. Table 27.12.5-1 describes the “site” fields that were tailored for ECS.



**Figure 27.12.5-1. Site Master Manager CHUI**

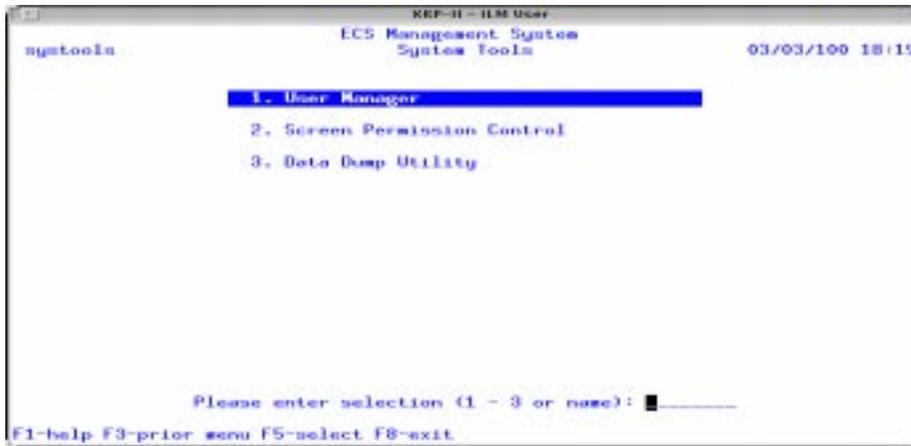
**Table 27.12.5-1. Site Master Manager Field Descriptions**

Field Name	Data Type	Size	Description
site id	string	6	Code that uniquely identifies an ECS site.
site name	string	46	Full name of an ECS site.
phone number	string	8	Phone number of a point of contact at the site
street address	string	30	Address for the site
city	string	20	Name of the city in which the site is located
state	string	2	Abbreviation for the state in which the site is located
zip	string	10	Postal code for the site
country	string	16	Code for the country in which the site is located

### **27.13 System Tools Menu (Perform XRP-II System and Database Administration)**

XRP-II provides several programs for controlling user access, maintaining the database, and customizing the user interface. Many of the programs are supported by data entry screens accessed via XRP-II's System Tools menu (Figure 27.13-1)

**Note:** The System Tools menu is new with version 3.0.1 of XRP-II. It moves control of menus, screens, and user access from ASCII files to the database and brings to the menu handler functions previously available only at the command line. Vendor manuals do not yet reflect the change.



**Figure 27.13-1. System Tools Menu Screen**

The System Tools menu is broken down into the following functions:

**Table 27.12-1. System Utilities Menu options**

Menu item	Function	Section
User Manager	For registering new ILM users	27.13.1
Screen Permission Control	For Managing the user group and menu permission	27.13.2
Data Dump Utility	For dumping one or more ILM tables into specially formatted data files.	27.13.3

### 27.13.1 User Manager Screen

Operators use the User Manager screen (Figure 27.13.1-1) to register the Unix userids of individuals authorized to run XRP-II. Individuals are assigned a group of menus and screens that may be accessed and a specific entry menu. As part of logon processing, XRP-II's menu handler obtains an individual's Unix userid from the system and verifies it against those that have been registered.

Use this screen to add, delete, modify or browse XRP-II user records.

**Note:** Consistent with the single login philosophy of ECS, XRP-II prompts the user for neither a userid nor a password when the ECS standard Baseline Manager startup script "pcs" is used. The script passes XRP-II the operator's userid as an argument based on results of a "whoami" command and access is controlled via screen permissions rather than passwords.

**Note:** Data access for operators running XRP-II executable from the command line is governed by Unix file permissions rather than the menu handler.



**Figure 27.13.1-1. User Manager CHUI**

**Table 27.13.1-1. User Manager Field Descriptions**

Field Name	Data Type	Size	Description
login id	String	32	Full, network-addressable name of a host
password	String	6	Code that uniquely identifies an ECS site
first name	String	30	First name of the user
last name	String	30	Surname of the user
title	String	20	Name of the user's position or job
group	String	8	Name for a collection of XRP-II data entry screens and menus. These are the default screens and menus the user can access. Deviations can be specified via Screen Permission Control.
address	String	30	Street address where the responsible engineer is located
city	String	20	Name of the city in which the responsible engineer is located
phone	String	18	Phone number for the responsible engineer
state	String	2	Name of the state in which the responsible engineer is located
zip	String	10	Postal code where the responsible engineer is located
start menu	String	8	Name or code of the menu initially presented to the user at login

## 27.13.2 Screen Permission Control Screen

Screen Permission Control (Figure 27.13.2-1) lets operators specify the XRP-II menus and data entry screens a user or user group can access and the data manipulation permissions the user or group are granted when accessing a screen. It replaces reliance on the “users” and “groups” files

discussed in Sections 5 and D.5 of the *XRP-II System Reference Manual*, however the concept of access and privileges by group and user is the same.

Use this screen to browse, add to, or edit existing screen permission control records. Each record renders a menu or data entry screen accessible to some user or group. For data entry screens, it also assigns to the user or group the privilege to query (inquire), add, modify, and/or delete records via the screen. A privilege is assigned by placing a “Y” in the appropriate privilege field. Similarly, a privilege is removed by placing an “N” in the appropriate privilege field.

Consider the following when modifying screen permissions:

- Privileges specified for a user take precedence over privileges specified for the user’s group
- A user or group is granted access to a menu or screen only if a privilege is assigned.
- Assignment of All Privilege overrides other privileges specified in the record
- Privileges specified in the record do not override permission restrictions coded into specifications for the screen (e.g., no user can update the database via a screen marked for querying the database only, regardless the privileges the user is given for the screen.)



**Figure 27.13.2-1. Screen Permission Control CHUI**

ILM is delivered with a default set of user groups and associated screen permissions (see Section 27.2). Example ways an operator might extend this set include:

- Making a screen available to a group - add a record that names the screen and group, then assign at least one privilege for the group
- Making a screen accessible to only certain users - add a record for each user. Name the screen and the user, and assign at least one privilege for the user. Then find and delete

any records that make the screen accessible to groups other than any established for the system administrator.

- Increasing a screen’s privileges for a member of a group - add a record that names the screen and the user, and assign the extra privilege for the user.
- Restricting a screen’s privileges for a member of a group - add a record that names the screen and the user, and remove the privilege(s) for the user

Table 27.13.2-1 describes this screen’s fields.

**Table 27.13.2-1. Screen Permission Control Field Descriptions**

Field Name	Data Type	Size	Description
screen or menu code	string	8	Identifier (short name) that XRP-II programs use in referencing an XRP-II screen or menu (e.g., pici).
group or user id	string	8	Name that classifies XRP-II users according to access required to menus and screens, or an individual’s Unix userid
inquire privilege	string	1	Code indicating if the group or user can: a) read database records via the named screen; or b) can access the named menu.
modify privilege	string	1	Code indicating if the group or user can: a) modify database records via the named screen; or b) can access the named menu.
delete privilege	string	1	Code indicating if the group or user can: a) delete database records via the named screen; or b) can access the named menu.
add privilege	string	1	Code indicating if the group or user can: a) add database records via the named screen; or b) can access the named menu.
all privilege	string	1	Code indicating if the group or user can: a) read, modify, delete, and add database records via the named screen; or, b) can access the named menu.

### 27.13.3 Data Dump Utility Screen

Operators use the Data Dump Utility screen (Figure 27.13.3-1) to bulk dump one or more XRP-II database tables into specially formatted data files. A file is created for each database table, and it contains all fields for all records in the table. Fields are separated by pipe symbols (|). The first line in each file identifies the field ordering. See the XRP Tools, Techniques, and Conventions Manual, Sections 1.5 and 1.6, for file format conventions XRP-II uses.

Enter Modify mode and, using Table 27.13.3-1 as a guide, specify which tables to dump and whether to archive the resulting data files. Return to Inquiry mode, then enter “E” to initiate the dump and “Y” at the confirmation prompt. XRP-II will create the requested data files and return to the System Tools menu.

**Note:** If a tar file is named, XRP-II archives all formatted data files it finds regardless whether the corresponding database table was part of the current dump.



**Figure 27.13.3-1. Data Dump Utility CHUI**

**Table 27.13.3-1. Data Dump Utility Field Descriptions**

Field Name	Data Type	Size	Description
Dump	string	60	List of tables to dump (e.g., pm, ec, etc.). A null field causes all tables to be dumped. Section 4.3.3.4.1 describes how to obtain a list of XRP-II table names
Tar dump files	string	1	Code indicating whether or not to tar the data tables that were dumped
Tar file name	string	40	Pathname for the tar file in, or relative to, the database directory specified in environment variable \$DBPATH

# Appendix A. Additional Material

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TBS

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## Abbreviations and Acronyms-

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A <sub>o</sub>	Operational Availability
ACL	Access Control List
ADC	Affiliated Data Center (NOAA)
ADSERV	Advertising Service
AI&T	Algorithm Integration and Test
AIT	Algorithm Integration Team
AMASS	Archival Management and Storage System
ASCII	American Standard Code for Information Interchange
BBS	Bulletin Board System
CCB	Configuration Control Board (NASA Convention)
CCR	Configuration Change Request
CCRS	Canada Centre for Remote Sensing
CD	Compact Disk
CDE	Common Desktop Environment
CD-ROM	Compact Disk - Read Only Memory
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CDS	Cell Directory Service
CHCI	Communications Hardware Configuration Item
CHUI	Character User Interface
CI	Configuration Item
CIDM	Client Interoperability and Data Management
CM	Configuration Management
CMA	CM Administrator
CN	Change Notice
CO	Contracting Officer

COTR	Contracting Officer's Technical Representative
COTS	Commercial Off-the-Shelf (hardware or software)
CPU	Central Processing Unit
CR	Change Request
CRM	Change Request Manager
CSCI	Computer Software Configuration Item
CSMS	Communications and Systems Management Segment (ECS)
CSR	Consent To Ship Review
CSS	Communication Subsystem
DAA	Data Availability Acknowledgment
DAAC	Distributed Active Archive Center
DADS	Data Archive and Distribution System
DAN	Data Availability Notice
DAP	Delivered Algorithm Package
DAR	Data Acquisition Request
DAS	Data Availability Schedule
DAT	Digital Audio Tape
DB	Database
DBA	Database Administrator
DBMS	Database Management System
DCE	Distributed Computing Environment (OSF)
DCF	Data Capture Facility
DCN	Document Change Notice
DCO	Document Change Order
DCR	Data Collection Request
DD	Data Dictionary
DDA	Data Delivery Acknowledgment
DDICT	Data Dictionary
DDIST	Data Distribution

DDN	Data Delivery Notice
DDSRV	Document Data Server
DDTS	Distributed Defect Tracking System
DES	Data Encryption Standard
DESKT	Desktop Configuration Item
DID	Data Item Description
DIF	Data Interchange Formant
DIMGR	Distributed Information Manager
DME	Distributed Management Environment
DMO	Data Management Organization
DNS	Domain Name Service
DOF	Distributed Object Framework
DPR	Data Processing Request
DPS	Data Processing Subsystem
DR	Delivery Record
DS	Data Server
DSS	Data Server Subsystem
e-mail	Electronic Mail
EBNet	EOSDIS Backbone Network (combines Ecom and ESN)
ECN	Equipment Control Number
ECS	EOSDIS Core System
EDC	EROS Data Center (DAAC)
EDF	ECS Development Facility
EDHS	ECS Data Handling System
EGS	EOS Ground System
EIN	Equipment Identification Number
EMC	Enterprise Monitoring and Coordination
EOC	EOS Operations Center (ECS)
EOS	Earth Observing System

EOSDIS	Earth Observing System Data and Information System
EP	Evaluation Package
EROS	Earth Resources Observation System
ESD	Electrostatic Discharge
ESDIS	Earth Science Data and Information System (GSFC Code 505)
ESDT	Earth Science Data Type
ESOD	Earth Science On-line Directory
ET	Eastern (standard or daylight savings) Time
FDDI	Fiber Distributed Data Interface
FORTTRAN	FORmula TRANslation (computer language)
FOS	Flight Operations Segment (ECS)
FOT	Flight Operations Team
FTP	File Transfer Protocol
FTPD	File Transfer Protocol Daemon
GB	Gigabyte ( $10^9$ )
Gb	Gigabit ( $10^9$ )
GBps	Gigabytes per Second
Gbps	Gigabits per Second
GCDIS	Global Change Data and Information System
GCMD	Global Change Master Directory
GFE	Government Furnished Equipment
GFP	Government Furnished Property
GSFC	Goddard Space Flight Center
GUI	Graphical User Interface
H/W	Hardware
HDF	Hierarchical Data Format
HIPPI	High Performance Parallel Interface
HPOV	HP Open View
HSM	Hierarchical Storage Management

HTML	Hypertext Mark-Up Language
HWCI	Hardware Configuration Item
I&AT	Integration and Acceptance Test
I&T	Integration and Test
I&TT	Integration and Test Team
IATO	Independent Acceptance Test Organization
ICD	Interface Control Document
ICLHW	Ingest Client Hardware [configuration item]
ILM	Inventory, Logistics, and Maintenance
ILP	Integrated Logistics Plan
ILS	Integrated Logistics Support
ILSMT	ILS Management Team
ILSO	ILS Office
INGST	Ingest Services
INS	Ingest System
IOS	Interoperability Subsystem
IP	Internet Protocol
IQ	Intelligent Query and IQ Access
Ir1	Interim Release 1
ISDN	Integrated Services Digital Network
ISS	Internetworking Subsystem
ISQL	Interactive SQL
IV&V	Independent Verification and Validation
JIL	Job Information Language
JPL	Jet Propulsion Laboratory (DAAC)
KB	Kilobyte ( $10^3$ )
Kb	Kilobit ( $10^3$ )
KBps	Kilobytes per Second

Kbps	Kilobits per Second
L-7	Landsat-7 (Landsat-7 for EDHS search)
L0	Level 0
L0-L4	Level 0 (zero) through Level 4 (use Level-0 through Level-4 for EDHS search)
LAN	Local Area Network
Landsat	Land Remote-Sensing Satellite
LaRC	Langley Research Center (DAAC)
LDOS	Landsat Data and Operations System
LIM	Local Information Manager
LIMGR	Local Information Manager
LMC	Local Maintenance y
Loral	Loral Aerosys (ECS Team)
LRU	Line Replaceable Unit
M	Million, mega (prefix)
M&O	Maintenance and Operations
MAN	Metropolitan Area Network
MB	Megabyte ( $10^6$ )
Mb	Megabit ( $10^6$ )
MBps	Megabytes per Second
Mbps	Megabits per Second
MCF	Metadata Configuration File Metadata Control File
MD	Master Directory
MDA	Management Data Access
MDT	Mean Downtime
MHWCI	Management Hardware Configuration Item
MHz	Megahertz
MIB	Management Information Base
MIS	Management Information System

MM	Millimeter
MO&DSD	Mission Operations and Data Systems Directorate (GSFC Code 500)
MOU	Memorandum of Understanding
MR	Malfunction Report
MSEC	Millisecond
MSFC	Marshall Space Flight Center (DAAC)
MSS	Management Systems Subsystem
MTBCM	Mean Time Between Corrective Maintenance
MTBF	Mean Time Between Failure
MTBM	Mean Time Between Maintenance
MTBPM	Mean Time Between Preventive Maintenance
MTPE	Mission to Planet Earth
MTTR	Mean Time to Repair
MTTRes	Mean Time to Restore
N/A	Not Applicable
NA	Network Administrator
NASA	National Aeronautics and Space Administration
Nascom	NASA Communications
NCC	Network Control Center (GSFC) network communication center
NCR	Nonconformance Report
NCS	Netscape Commerce Server
NCSA	National Center for Supercomputer Applications
NMCI	Network Management Configuration Item
NNM	HPOpenView Network Node Manager
NOAA	National Oceanic and Atmospheric Administration
NSI	NASA Science Internet
NWCI	Networking Configuration Item
OEM	Original Equipment Manufacturer

OJT	On-the-Job Training
OPS	Operations
Ops Super	Operations Supervisor
ORPA	Operations Readiness & Performance Assurance
ORR	Operations Readiness Review
OS	Operating System
OSF	Open Software Foundation
OTS	Off the Shelf
OVW	HP OpenView Windows
PAIP	Performance Assurance Implementation Plan
PB	Petabyte (10 <sup>15</sup> )
PC	Personal Computer Process Control
PCF	Process Control File
PDL	Program Design Language
PDPS	Planning and Data Processing System
PGE	Product Generation Executive
PGS	Product Generation Service
PI	Principal Investigator
PIN	Password Identification Number
PLANG	Production Planning CSCI
PLNHW	Planning Hardware [configuration item]
PLS	Planning Subsystem
PM	Preventative Maintenance
PPM	Principal Period of Maintenance
PR	Production Request
QA	Quality Assurance
QC	Quality Control
QRU	Query, Retrieve, and Update

R&M	Reliability and Maintainability
RAID	Redundant Array of Inexpensive Disks
RAM	Random Access Memory
RE	Responsible Engineer
RID	Review Item Discrepancy
RMA	Return Material Authorization
RMS	Resource Management Subsystem
RSM	Replication Server Manager
RSSD	Replication Server System Database
S/C	Spacecraft
S/W	Software
S/WCI	Software Configuration Item
SA	System Administrator
SATAN	Security Administrator Tool for Analyzing Networks
SCDO	Science and Communications Development Office (ECS)
SCF	Science Computing Facility
SCSI	Small Computer System Interface
SDP	Science Data Processing
SDPF	Science Data Processing Facility
SDPS	Science Data Processing Segment (ECS)
SDPS/W	Science Data Production Software
SDPTK	Science Data Processing Toolkit
SDSRV	Science Data Server
SE	System Engineering
SE&I	System Engineering and Integration
SEI&T	System Engineering, Integration, and Test
SEO	Sustaining Engineering Organization
SEPG	Software Engineering Process Group
SGI	Silicon Graphics Incorporated

SI&T	System Integration and Test
SMC	System(s) Monitoring and Coordination Center
SMF	Status Message Facility
SMTP	Simple Mail Transport Protocol
SNMP	Simple Network Management Protocol
SOR	System Operations Review
SORR	Segment Operational Readiness Review
SPRHW	Science Processing Hardware [configuration item]
SQL	Structured Query Language
SQR	SQL Report Writer
SRR	System Requirements Review
SSAP	Science Software Archive Package
SSI&T	Science Software Integration and Test
SSL	Secure Socket Layer
STMGT	Storage Management
T&M	Time and Materials
TB	Terabyte (10 <sup>12</sup> )
TBC	To Be Confirmed
TBD	To Be Determined
TBR	To Be Resolved
TBS	To Be Supplied
Tbyte	Terabyte
TCP/IP	Transmission Control Protocol/Internet Protocol
TEC	Tivoli Enterprise Console
telecon	Telephone Conference
TELNET	Telecommunication Network
TRMM	Tropical Rainfall Measurement Mission
TSDIS	TRMM Science Data and Information System

TT	Trouble Ticket
UDP	User Datagram Protocol
UR	Universal Reference
URDB	User Recommendations Database
URL	Universal Resource Locator
USO	User Support Office
US Rep	User Services Representative
UWG	User Working Group
VDD	Version Description Document
VOB	Versioned Object Base (ClearCase)
WAIS	Wide Area Information Server
WAN	Wide Area Network
WKBCH	Workbench
WKSHCI	Working Storage Hardware Configuration Item
WWW	World Wide Web

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